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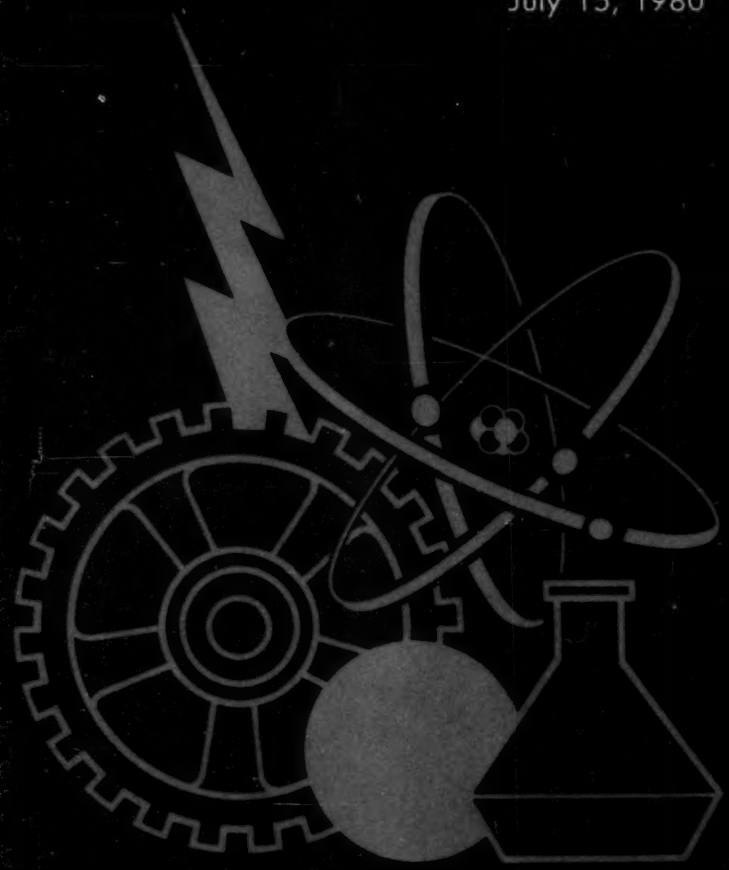
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 15, 1980



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 15, 1980 Volume 996 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Update of Information Concerning the Patent Cooperation Treaty (PCT)	996 OG 16
Statement on Prior Art	996 OG 17
Board of Appeals Decisions Rendered in the Month of May 1980	996 OG 17
Rulemaking Agenda	996 OG 17
Reissue Applications Filed	996 OG 23
Patent Notices	
Certificates of Correction for the Week of July 15, 1980	996 OG 25
Patents Available for Licensing or Sale	996 OG 25
National Technical Information Service	996 OG 28
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	996 OG 30
Condition of Patent Applications	996 OG 31
Reissue Patents Granted (30,332)	781
Plant Patents Granted (4,570)	785
Patents Granted	
General and Mechanical (4,212,087)	787
Chemical (4,212,642)	977
Electrical (4,213,002)	1077
Design Patents Granted (255,840)	1147
Index of Patentees	PI 1
Indices of Applicants of Reissues, Plants and Designs	PI 43
Classification of	
Patents (Including Reissues)	PI 47
Designs and Plants	PI 49
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 50
Designs and Plants	PI 51
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Update of Information Concerning the Patent Cooperation Treaty (PCT)

The following topics of interest to applicants and prospective applicants under the Patent Cooperation Treaty appear in this Notice:

Topic 1: Adherence to the Patent Cooperation Treaty (PCT) by Hungary and the Democratic People's Republic of Korea.

Topic 2: List of PCT Contracting States as of June 1, 1980.

Topic 3: Table of Fees for the processing of PCT International Applications.

Topic 4: Note concerning the Patent Treaty between Switzerland and Liechtenstein.

Topic 5: Modification of Section 203 of the Administrative Instruction under the PCT.

Topic 1: Ratification of the Patent Cooperation Treaty by Hungary and the Democratic People's Republic of Korea

Hungary deposited its instrument of ratification with the International Bureau on March 27, 1980. According to the provisions of Patent Cooperation Treaty (PCT) Article 63, the PCT came into effect for Hungary on June 27, 1980. Hungary may be designated in International Applications filed on and after June 27, 1980.

On April 8, 1980, the Democratic People's Republic of Korea (North Korea) deposited its instrument of accession to the PCT. This deposit will result in the Democratic People's Republic of Korea becoming a Contracting State of the PCT on July 8, 1980. Consequently, nationals and residents of the Democratic People's Republic of Korea will become entitled to file international applications under the PCT as from July 8, 1980, and, from the same date, it will be possible to file international applications designating the Democratic People's Republic of Korea.

Topic 3: PCT Fee Amounts (as of August 1, 1979)

Transmittal Fee	35.00
Search Fee	300.00
Basic Fee	
First 30 sheets	190.00
Basic Fee Supplement	
Each sheet over 30	3.50
Designation Fee	
Each State or group of States for which the same regional patent is sought	45.00

Topic 4: Note Concerning the Patent Treaty Between Switzerland and Liechtenstein

On April 1, 1980, a Patent Treaty between Switzerland and Liechtenstein will enter into force and, on the same day, the European Patent Convention will enter into force for Liechtenstein. Certain modifications to the Administrative Instructions under the PCT relating to the designation of Switzerland and Liechtenstein in international applications will also enter into force on April 1, 1980.

Under the Treaty between Switzerland and Liechtenstein, the two will constitute a single territory for patent purposes and the Swiss Intellectual Property Office will have assigned to it the performance of the administrative tasks related hereto. The Swiss Intellectual Property Office will also act as the receiving Office for international applications under the PCT filed by the nationals and residents of Liechtenstein. The designation of either Switzerland or Liechtenstein in an international application will automatically have the effect of the desgnation of both.

Until April 1, 1980, international applications which designate Switzerland (whether for the purposes of a national patent or for a European patent) will have effect for Liechtenstein once a patent is granted by virtue of the present law in Liechtenstein which extends to Liechtenstein the effect of patents having effect for Switzerland. This makes

Topic 2: List of PCT Contracting States as of June 1, 1980

State	Ratification or Accession	Date of Ratification or Accession	Date From Which State May Be Designated
(1) Central African Republic*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	24 April 1979	24 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea	Accession	08 April 1980	08 July 1980

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI Member States. A designation of any State is an indication that all OAPI States have been designated. Note: only one designation fee is due regardless of the number of OAPI Member States designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member States are available through PCT, except for France, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due regardless of the number of EPC Member States designated.

it unnecessary to designate Liechtenstein in international applications filed prior to April 1, 1980; indeed, no provision will exist for effect to be given to such a designation prior to that date.

From April 1, 1980, the designation of Switzerland and Liechtenstein (or either of them without the other) in an international application (whether for the purposes of a patent granted by the Swiss Intellectual Property Office or for the purposes of a European patent) will have the effect of a designation for the purposes of a single patent granted with reference to and having effect for both Switzerland and Liechtenstein.

The following principles will apply with respect to the designation of Switzerland and Liechtenstein (or both) in international applications:

European Patents. If the designation is for the purposes of a European patent, the indication that a regional patent is sought (or alternatively that a European patent is sought) must be given in connection with the designation.

Patents granted by Swiss Intellectual Property Office. If a patent to be granted by the Swiss Intellectual Property Office is sought, the designation must not contain any further indications besides the name of Switzerland or Liechtenstein (or both), in particular the words "regional patent" must not be used.

Double Designations. The designation of Switzerland and Liechtenstein for the purposes of a European patent and also for the purposes of a patent granted by the Swiss Intellectual Property Office (i.e., a double designation) is also possible where either of them (or both) is (are) indicated once with the indication that a regional patent is sought and once without such indication.

No additional designation fee will be payable under the PCT by reason of the fact that Liechtenstein is included in the designation of Switzerland and *vice versa* since the effect of the Treaty between Switzerland and Liechtenstein is, for the purposes of the PCT, to create a unitary regional patent for the two States.

TOPIC 5: ADMINISTRATIVE INSTRUCTIONS UNDER THE PATENT COOPERATION TREATY (PCT)

Modification

The Director General of the World Intellectual Property Organization has modified Section 203 of the Administrative Instructions under the PCT pursuant to Rule 89.2 of the PCT Regulations. The text of Section 203 as so modified is set out below. The new text takes effect on April 1, 1980.

Section 203

Regional Patents

(1) Where the applicant wishes to obtain a regional patent in respect of any designated State, he shall, subject to paragraphs (2) and (3), make the indication in the request referred to in Rule 4.1(b)(IV) by inserting the words "regional patent," or their equivalent in the language of the international application, immediately after the indication of the said State or, where an indication has been made under Section 202, after that indication, provided that:

(i) Where Article 4(1)(ii), third clause applies, and not all the States party to the regional treaty have been designated, the international application shall be treated as if all those States had been designated and as if the designations of all such States contained the said words, whether the said designations contained an indication of the wish to obtain a regional patent or, according to Article 4(1)(ii), fourth clause, are to be treated as containing such indication:

(ii) Where the national law of any designated State contains a provision as referred to in Article 45(2), the International Bureau shall, according to Article 4(1)(ii), fourth clause, treat the designation as if it contained the said words even where the applicant failed to indicate them.

(2) The applicant may, instead of the words "regional patent" referred to in paragraph (1), use other words to the same effect; such words may include a reference to a patent to be granted by the European Patent Office under the Convention on the Grant of European Patents done at Munich on October 5, 1973 ("European patent"), where the regional patent which the applicant wishes to obtain is a European patent.

(3) An indication, in respect of the designation of Liechtenstein or Switzerland, or both, of the wish to obtain a regional patent shall be taken as indicating a wish to obtain a European patent in respect of those States, whereas the absence of any indication of the wish to obtain a regional patent in respect of such a designation shall be taken as indicating a wish to obtain a patent granted by the Swiss Intellectual Property Office in respect of those States.

SIDNEY A. DIAMOND,
Dated: June 17, 1980. *Commissioner of Patents and Trademarks.*

Statement on Prior Art

In March, 1980, the Quality Review Branch conducted a survey to determine the value of the "explanations of relevance" submitted by applicants in prior art statements as required in 37 CFR 1.97–1.99. Of the 128 cases (part of the 4% sample selected in the normal quality review process) surveyed, 64 contained prior art citations and 58 of these were accompanied by "explanations of relevance" for each cited reference. Of the 58 explanations of relevance, 45 (77%) were considered by examiners to be helpful in assessing each prior art citation in terms of finding relevant disclosures which might not otherwise have been found or in saving time in locating such disclosures.

SIDNEY A. DIAMOND,
Dated: June 17, 1980. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of May 1980

Affirmed	167
Affirmed in part	24
Reversed	61
Total	252

Rulemaking Agenda

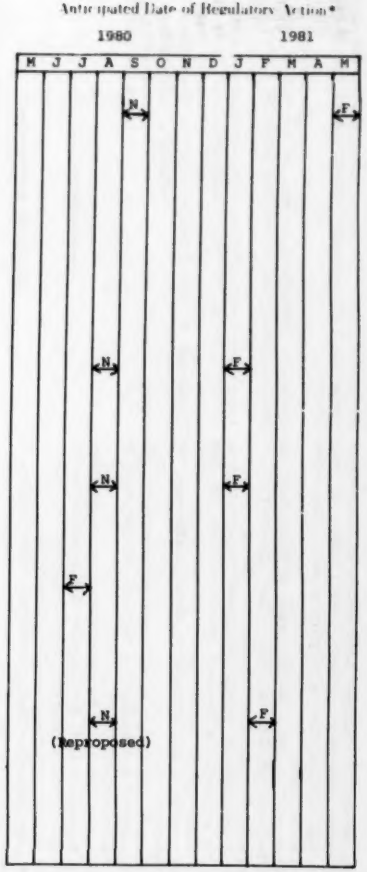
On June 5, 1980, the Department of Commerce published in the FEDERAL REGISTER, 45 FR 37972, its semiannual agenda of rulemaking actions planned or under consideration by its various units, including the Patent and Trademark Office. The agenda consists of three schedules, A, B, C, and brief descriptions of each rule change under consideration.

Schedule A lists the rules or rule changes under consideration, of which 10 are patent or trademark rules or rule changes. Schedule B lists existing rules selected for review over the next 12 months, none of which, however, are patent or trademark rules. Schedule C lists rules or rule changes which appeared in the last agenda but are being dropped from Schedules A and B. Nine are patent or trademark rules or rule changes.

For those members of the public who are interested in the Patent and Trademark Office's agenda of rulemaking activities, the portions of Schedules A and C which list patent and trademark rules or rule changes, and the brief descriptions of the 10 patent and trademark rules or rule changes under consideration are reproduced below.

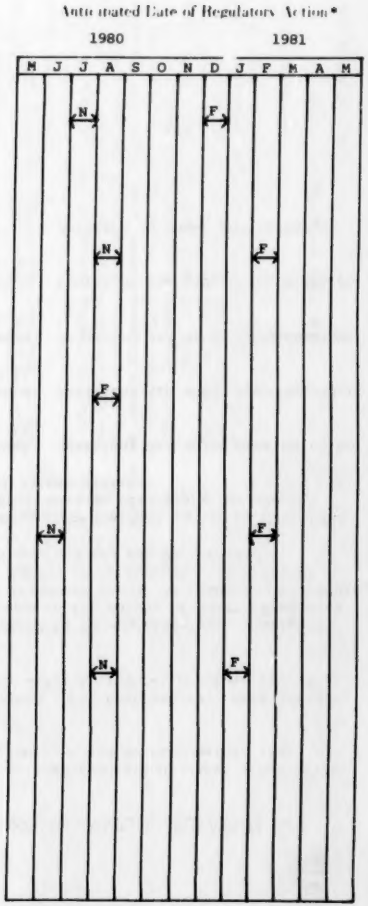
Schedule A - DOC SEMIANNUAL AGENDA OF PENDING REGULATIONS
MAY 15, 1980

Department Unit	Title of Regulation Under Consideration	Contact Person	Is Regulation Significant? Yes	No	Unknown	Is Regulatory Analysis Required? Yes	No	Unknown	Anticipated Date of Regulatory Action*
PTI/PTO	Ex Parte Prosecution of Trademark Applications; Inter Partes Proceedings before the Trademark Trial and Appeal Board; Petitions to the Commissioner and Post-Registration Requirements (37 CFR 2.20, 2.27, 2.63, 2.65, 2.81, 2.88, 2.94-2.135, 2.142, 2.146, 2.165, 2.173, 2.184, and 2.186)	David J. Kera, Member, Trademark Trial and Appeal Board (703) 557-3551	X				X		N S, F M
PTI/PTO	Secrecy of Certain Inventions and Licenses to File Applications in Foreign Countries (37 CFR Part 5)	S. W. Engle Act'g. Dir., Special Laws Admin. Group (703) 557-2877	X				X		N A, F J
PTI/PTO	Requests for Identifiable Records (37 CFR 1.15)	John W. Dewhirst Assoc. Solicitor (703) 557-3542	X				X		N A, F J
PTI/PTO	Compulsory Counterclaims in Trademark Opposition and Cancellation Proceedings (37 CFR 2.106 and 2.114)	David J. Kera, Member, Trademark Trial and Appeal Board (703) 557-3551	X				X		F J
PTI/PTO	Patent Application Oath or Declaration Requirements (37 CFR 1.65, 3.18 and 3.18a)	Louis O. Maassel, Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		N A (Reproposed), F F



* A = Advanced Notice of Proposed Rulemaking; N = Notice of Proposed Rulemaking; I = Interim Rule; F = Final Rule.

Department Unit	Title of Regulation Under Consideration	Contact Person	Is Regulation Significant? Yes	No	Unknown	Is Regulatory Analysis Required? Yes	No	Unknown	Anticipated Date of Regulatory Action*
PTI/PTO	Professional Conduct of and Advertising by Persons Registered to Practice Before the PTO (37 CFR 1.344, 1.345, 2.13 and 2.14)	Harry I. Moatz Commissioner of Patents and Trademarks (703) 557-2238	X				X		N 1980 Dec; F 1981 Jan
PTI/PTO	Prosecution of Patent Applications after Final Rejection	Louis O. Maassel Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		N 1980 Aug; F 1981 Feb
PTI/PTO	Deposit of Computer Program Listings (37 CFR 1.21, 1.77 and 1.96)	Louis O. Maassel Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		F 1980 Aug
PTI/PTO	Amending Patents and Patent Applications to Correct Inventorship (37 CFR 1.45 and 1.324)	Louis O. Maassel Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		N 1980 Jun; F 1981 Feb
PTI/PTO	Interferences; Motions and Printed Briefs (37 CFR 1.225, 1.231, 1.253, 1.254, and 1.258)	Ian A. Calvert Chairman, Board of Patent Interferences (703) 557-3625	X				X		N 1980 Aug; F 1981 Jan



* **A** = Advanced Notice of Proposed Rulemaking; **N** = Notice of Proposed Rulemaking; **I** = Interim Rule; **F** = Final Rule.

Schedule C -- Regulations Deleted From Prior DOC
Semiannual Agenda

Department Unit	Title of Regulation	Prior Agenda Listing	Reason for Deletion from Agenda
PTI/PTO	* Interferences, Motions Before the Primary Examiner (37 CFR 1.231)	UC	Combined with related regulations under a new title: Interferences; Motions and Printed Briefs (see Schedule A).
PTI/PTO	* Examination of Reissue Applications (37 CFR 1.176)	UC	Changes determined to be unnecessary. Alternatives available under existing regulations have proven to be adequate.
PTI/PTO	* Recording Interests in Patents, Trademarks, Patent Applications and Trademark Applications (37 CFR 1.331-334, 2.185-187)	UC	Changes determined to be unnecessary. Guidelines will be published in the Manual of Patent Examining Procedure and Trademark Manual of Examining Procedure to assist the public in determining the kinds of interests that may and may not be recorded.
PTI/PTO	* Advisory Opinions by the PTO on the Validity of Patents	UC	Postponed pending congressional action on H.R. 6933 and S. 1679 which include provisions for the re-examination of issued patents.
PTI/PTO	* Inter Partes Proceedings and Procedures before the Trademark Trial and Appeal Board (37 CFR 2.91-136 and 2.27(d))	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Appeals to the Trademark Trial and Appeal Board (37 CFR 2.141-142 and 2.64)	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Secrecy of Certain Inventions and Licenses to File Applications in Foreign Countries (37 CFR Part 5)	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Petitions to the Commissioner in Trademark Cases (37 CFR 2.146-2.148, 2.64, 2.65 and 2.184)	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Request for Identifiable Records (37 CFR 1.15)	UR	Review completed. Revision is under consideration (see Schedule A).

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Ex parte prosecution of trademark applications, inter partes proceedings before the Trademark Trial and Appeal Board, petitions to the Commissioner and post-registration requirements (37 CFR 2.20, 2.27, 2.63, 2.65, 2.81, 2.88, 2.94–2.135, 2.142, 2.146, 2.165, 2.173, 2.184 and 2.186).

(a) *Description and Need:* PTO is considering a revision of its regulations relating to the ex parte prosecution of trademark applications, inter partes proceedings before the Trademark Trial and Appeal Board, Petitions to the Commissioner and post-registration requirements, currently published in Title 37, *Code of Federal Regulations,* Part 2, which have been found on review to need clarification, updating and expansion.

(b) *Legal Authority:* Pub. L. 489, 79th Cong., 2d Sess., Ch. 540, Sec. 41, as amended (15 U.S.C. 1123, as amended).

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (September 1980).

(ii) In final form (May 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. A public hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:* (i) Regulatory analysis required?

(yes , no X , unknown).

(ii) *Other Documents Available:* None

(h) *Agency Contact:* David J. Kera, Member, Trademark Trial and Appeal Board, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–3551.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Secrecy of certain inventions and licenses to file applications in foreign countries (37 CFR Part 5).

(a) *Description and Need:* PTO has reviewed these regulations and found that they should be revised to clarify procedures and provide up-to-date information relating to these procedures.

(b) *Legal Authority:* 35 U.S.C. 6 and 181–188, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes , no , unknown).

(ii) Is the regulation major?

(yes , no , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (August 1980).

(ii) In final form (January 1981).

(e) *Tentative Plan for Obtaining Public Comments.* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. No public hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory analysis required?

(yes , no , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* S. W. Engle, Acting Director, Special Laws Administration Group, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–2877.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Requests for identifiable records (37 CFR 1.15).

(a) *Description and Need:* PTO has reviewed and found that it needs to update its regulation, currently published in Title 37, *Code of Federal Regulations,* Part 1, relating to requests by members of the public for records not disclosed as part of the regular informational activity of the PTO and not otherwise dealt with in Part 1.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes , no , unknown).

(ii) Is the regulation major?

(yes , no , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (August 1980).

(ii) In final form (January 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. No public hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory analysis required?

(yes , no , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* John W. Dewhirst, Associate Solicitor, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–3551.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Compulsory counterclaims in trademark opposition and cancellation proceedings (37 CFR 2.106 and 2.114).

(a) *Description and Need:* PTO is considering a revision of its regulations relating to counterclaims in trademark cases, currently published in Title 37, *Code of Federal Regulations,* Part 2. Defendants who could counterclaim to cancel a registration pleaded by the plaintiff in trademark opposition and cancellation cases are not required by current regulations to do so. The revision under consideration would require the defendant to do so. The primary benefit of the revision will be to avoid piecemeal litigation and settle all issues between the parties at one time with a minimum expenditure of time and effort by the parties and the PTO.

(b) *Legal Authority:* Pub. L. 489, 79th Cong., 2d Sess., Ch. 540, Sec. 41, as amended (15 U.S.C. 1123, as amended).

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable:* Anticipated Dates Proposal Will Appear in the FEDERAL REGISTER:

(i) In proposed form (April 16, 1979).

(ii) In final form (July 1980).

(e) *Tentative Plan for Obtaining Public Comments:* PTO published the proposed revision in the FEDERAL REGISTER (44 FR 22478, April 16, 1979) and the OFFICIAL GAZETTE for comment.

(f) *Major Issues:* The major issue involved in the proposed action is whether a defendant would, in certain circumstances be precluded from filing a concurrent use application if (s)he is required to counterclaim for cancellation of a registration pleaded by the plaintiff.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* A file of the comments the PTO has received and a summary and analysis of the comments will be available for examination by interested parties.

(h) *Agency Contact:* David J. Kera, Member, Trademark Trial and Appeal Board, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–3551.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Patent application oath or declaration requirements. (37 CFR 1.65, 3.18 and 3.18a).

(a) *Description and Need:* PTO proposes to revise its regulations relating to the information patent applicants are required to provide in their oaths or declarations in patent applications, currently published in Title 37, *Code of Federal Regulations*, Part 1. PTO proposes to revise these regulations to require that an oath or declaration speaks as of the filing date of the application if the application is a continuation-in-part. This requirement will provide information that court decisions indicate should be considered by the PTO in examining patent applications.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (published 43 FR 55417, November 28, 1978; revised proposal August 1980).

(ii) In final form (February 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO published a proposed revision in the FEDERAL REGISTER for comment and held a public hearing on February 7, 1979. In view of objections to one part of the proposed revision, that part is being deleted. A revised proposal will be published for comment since the original proposal was inadvertently not published in the OFFICIAL GAZETTE. No further hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* A file of the written comments received by the PTO, a transcript of the hearing and a summary and analysis of comments will be available for examination by interested parties.

(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3070.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Professional conduct of and advertising by persons registered to practice before the PTO. (37 CFR 1.344, 1.345, 2.13 and 2.14).

(a) *Description and Need:* PTO is considering a revision of its regulations prescribing the standards of conduct and advertising of persons registered to practice before the PTO, currently published in Title 37, *Code of Federal Regulations*, Parts 1 and 2. PTO proposes to revise these regulations to make reference to the current version of the American Bar Association's "Code of Professional Responsibility," an older version being referred to in the current regulations, and to make the standards for advertising consistent with recent decisions of the Supreme Court.

(b) *Legal Authority:* 35 U.S.C. 6 and 31, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (July 1980).

(ii) In final form (December 1980).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish the proposed revision of these regulations in the FEDERAL REGISTER and the OFFICIAL GAZETTE for comment. A public hearing will also be held.

(f) *Major Issues:* The major issue is whether the American Bar Association's "Code of Professional Responsibility" should continue to be the PTO's standard of conduct.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* Harry I. Moatz, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-2238.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Prosecution of patent applications after final rejection.

(a) *Description and Need:* PTO is considering a revision of its regulations currently published in Title 37, *Code of Federal Regulations*, Part 1, to allow the prosecution of patent applications to continue after a final rejection if an additional fee is paid. The revision will benefit patent applicants by making it unnecessary for them to file a complete new application in order to continue prosecution after a final rejection in the original application. The PTO will benefit from a saving in file space and a reduction in handling and recordkeeping costs.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (August 1980).

(ii) In final form (February 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE for comment. A public hearing may be held.

(f) *Major Issues:* The major issue is whether such revision is within the Commissioner's rulemaking authority or will require legislative authorization.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3070.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Deposit of computer program listings. (37 CFR 1.21, 1.77 and 1.96).

(a) *Description and Need:* PTO proposes to revise its regulations relating to patent application disclosures, currently published in Title 37, *Code of Federal Regulations*, Part 1, to allow lengthy computer program listings to be deposited in the PTO and incorporated by reference in the patent application.

Under current regulations, lengthy computer program listings must be reproduced in the specification or the drawings as integral parts of a patent application. The proposed revision will benefit patent applicants by relieving them of the burden and expense of reproducing lengthy computer program listings.

The PTO and patent applicants will both benefit from a reduction in the cost of printing patents which do not include a lengthy computer program listing.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (June 15, 1977).

(ii) In final form (August 1980).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish the proposed revision in the FEDERAL REGISTER (42 FR 30522, June 15, 1977) for comment and held a public hearing.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*
(1) Regulatory Analysis Required?
(yes , no X , unknown).
(2) *Other Documents Available:* A file of the written comments received by the PTO, a summary and analysis of the comments and a transcript of the hearing will be available for examination by interested parties.
(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent and Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–3070. J. Kent Hughes, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–0410.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Amending patents and patent applications to correct inventorship. (37 CFR 1.45 and 1.324).
(a) *Description and Need:* PTO is considering a revision of its regulations, currently published in Title 37, *Code of Federal Regulations*, Part 1, to permit the substitution of one sole inventor for another sole inventor in patent applications under appropriate circumstances. The revision is needed in order to remove restrictions against this type of substitution under the circumstances existing in *Stoddard v. Dann*, 564 F. 2d 556, 195 USPQ 97 (D.C. Cir. 1977).
(b) *Legal Authority:* 35 U.S.C. 6, as amended.
(c) *Importance:*
(i) Is the regulation significant?
(yes X , no , unknown).
(ii) Is the regulation major?
(yes , no X , unknown).
(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:
(i) In proposed form (June 1980).
(ii) In final form (February 1981).
(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision of the regulations in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. A public hearing will be held.
(f) *Major Issues:* The major issue is whether the PTO should authorize substitution of one sole inventor for another under the circumstances in *Stoddard v. Dann*.
(g) *Documents Available to Interested Parties:*
(1) Regulatory Analysis Required?
(yes , no X , unknown).
(2) *Other Documents Available:* None.
(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–3070.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Interferences; motions and printed briefs (37 CFR 1.225, 1.231, 1.253, 1.254 and 1.258).
(a) *Description and Need:* PTO is considering a revision of its regulations, currently published in Title 37, *Code of Federal Regulations*, Part 1, relating to motions and printed briefs which rival inventors may file in interference proceedings conducted to determine who was the first inventor.
Recent experience has demonstrated a need to make it clear that after an interference has been redeclared, a motion is not permitted if it could have been filed earlier during the motion period and been considered by the primary examiner. A recent decision of the United States Court of Customs and Patent Appeals indicates a need to state specifically that an issue of benefit raised by motion is not preserved for later consideration at final hearing unless the motion was transmitted to and decided by, the primary examiner. The same Court has also made certain amendments in its rule governing the acceptance of printed briefs which should be reflected in the PTO's comparable regulation governing the acceptance of printed briefs.
(b) *Legal Authority:* 35 U.S.C. 6, as amended.
(c) *Importance:*
(i) Is the regulation significant?
(yes X , no , unknown).
(ii) Is the regulation major?
(yes , no X , unknown).
(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:
(i) In proposed form (August 1980).
(ii) In final form (January 1981).
(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision of the regulations in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. No public hearing will be held.
(f) *Major Issues:* There are no major issues.
(g) *Documents Available to Interested Parties:*
(1) Regulatory Analysis Required?
(Yes , no X , unknown).
(2) *Other Documents Available:* None.
(h) *Agency Contact:* Ian A. Calvert, Chairman, Board of Patent Interferences, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557–3625.

Dated: June 18, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,297,422, Re. S.N. 148,860, Filed May 12, 1980, Cl. 65/38, METHOD OF MAKING MOLDS FOR MULTI-FOCAL OPHTHALMIC LENSES, Stanley A. Emerson, et al., Owner of Record: *Itek Corporation, Lexington, Mass.*, Attorney or Agent: Homer O. Blair, et al., Ex. Gp.: 173

3,706,696, Re. S.N. 142,365, Filed Apr. 21, 1980, Cl. 260/29.7, GROUTING COMPOSITION, Frank E. Bernett, et al., Owner of Record: *Tile Council of America, Inc., New York, N.Y.*, Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 144

3,826,616, Re. S.N. 141,220, Filed Apr. 17, 1980, Cl. 23/230 B, METHOD OF DIAGNOSING PREGNANCY IN MILK-PRODUCING ANIMALS BY PROGESTAGEN ASSAY, John A. Laing, Owner of Record: *National Research Development, London, England,* Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 177

3,887,342, Re. S.N. 143,883, Filed Apr. 25, 1980, Cl. 55/203, LIQUID-GAS SEPARATOR UNIT, Philip R. Bunnelle, Owner of Record: *Kobe, Inc., Huntington Park, Calif.*, Attorney or Agent: Richard D. Seibel, Ex. Gp.: 176

3,888,771, Re. S.N. 141,654, Filed Apr. 18, 1980, Cl. 210/500 M, HOLLOW FIBERS OF CUPRAMMONIUM CELLULOSE AND A PROCESS OF THE MANUFACTURE OF SAME, Masami Tsuge, et al., Owner of Record: *Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 176

3,906,031, Re. S.N. 062,411, Filed Jul. 31, 1979, Cl. 560/32, NOVEL 9-FLUORENYLMETHOXYCARBONYL COMPOUNDS, Louis A. Carpino, et al., Owner of Record: *Research Corporation, New York, N.Y.*, Attorney or Agent: Henry T. Burke, et al., Ex. Gp.: 126

3,945,390, Re. S.N. 140,641, Filed Apr. 15, 1980, Cl. 137/1, SEALING SYSTEM FOR SHUTOFF ELEMENTS, Richard Huber, Owner of Record: *Klinger AG, Zug, Switzerland,* Attorney or Agent: Karl W. Flocks, Ex. Gp.: 341

4,057,597, Re. S.N. 149,624, Filed May 13, 1980, Cl. 525/860, BLOCK-TYPE ARYL COPOLYESTERS AND FILAMENTS BASED ON THESE COPOLYESTERS, Bernard Fayolle, Owner of Record: *Rhone-Poulenc-Textile,*

Paris, France, Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 143

4,082,614, Re. S.N. 133,318, Filed Mar. 24, 1980, Cl. 435/292, MEANS FOR CONVEYING PATHOLOGICAL SPECIMENS SAFELY TO PLACES OF IDENTIFICATION, Donald H. DeVaughn, Owner of Record: *Bio-Syn, Inc., San Francisco, Calif.,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 176

4,085,187, Re. S.N. 140,656, Filed Apr. 15, 1980, Cl. 264/280, PROCESS FOR COMPRESSION ROLLING OF POLYMERIC FILMS, Richard H. Jenks, et al., Owner of Record: *Revere Copper & Brass, Inc., New York, N.Y.,* Attorney or Agent: Charles E. Miller, Ex. Gp.: 147

4,085,897, Re. S.N. 142,957, Filed Apr. 23, 1980, Cl. 241/18, CRUSHER-DRYER AND METHOD OF CRUSHING, William F. Hahn, et al., Owner of Record: *Pennsylvania Crusher Corporation, Broomall, Pa.,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 322

4,086,287, Re. S.N. 143,396, Filed Apr. 24, 1980, Cl. 585/466, SELECTIVE ETHYLATION OF MONO ALKYL BENZENES, Warren W. Kaeding, et al., Owner of Record: *Mobil Oil Corporation, New York, N.Y.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

4,089,014, Re. S.N. 146,275, Filed May 5, 1980, Cl. 354/38, EXPOSURE CONTROL SYSTEM, Hiroshi Ueda, et al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan,* Attorney or Agent: Robert J. Lasker, Ex. Gp.: 211

4,092,892, Re. S.N. 132,805, Filed Mar. 24, 1980, Cl. 83/413, HOLE FORMING MACHINE, Ronald Moone, Owner of Record: *BMG Pierce-All Limited, Berkshire, England,* Attorney or Agent: Lawrence E. Laubscher, Ex. Gp.: 323

4,095,922, Re. S.N. 147,870, Filed May 8, 1980, Cl. 417/313, ELECTRO-MECHANICAL DEVICE, James B. Farr, Owner of Record: *Tecumseh Products Company, Tecumseh, Mich.,* Attorney or Agent: George A. Gust, et al., Ex. Gp.: 343

4,098,567, Re. S.N. 145,932, Filed May 2, 1980, Cl. 432/72, RECIRCULATING PROCESSING OVEN HEATER, Gordon F. Hubbert, Owner of Record: *Gladd Industries, Inc., Detroit, Mich.,* Attorney or Agent: James A. Kushman, Ex. Gp.: 344

4,105,268, Re. S.N. 149,445, Filed May 13, 1980, Cl. 312/184, DOCUMENT HANGING SYSTEM, Abram G. Elias, et al., Owner of Record: *The Huey Company, Franklin Park, Ill.,* Attorney or Agent: Granger Cook, Jr., et al., Ex. Gp.: 355

4,110,963, Re. S.N. 147,016, Filed May 6, 1980, Cl. 57/86, BREAK-OUT APPARATUS FOR FAULT PREVENTION IN THE PRODUCTION OF MULTI-STRAND YARNS, Dieter E. A. Plate, et al., Owner of Record: *Commonwealth Scientific and Industial Research Organization, Campbell, Australia,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 244

4,118,720, Re. S.N. 143,892, Filed Apr. 25, 1980, Cl. 354/81, VIEWFINDER EYEPIECE LEVELING DEVICE, Robert E. Gottschalk, Owner of Record: *Panavision, Incorporated, Tarzana, Calif.,* Attorney or Agent: John B. Young, Ex. Gp.: 211

4,137,606, Re. S.N. 132,732, Filed Mar. 24, 1980, Cl. 24/16 PB, WEBBED HARNESSING DEVICE, William Ellis Wood, Owner of Record: *Dennison Manufacturing Company, Framingham, Mass.,* Attorney or Agent: George E. Kersey, Ex. Gp.: 355

4,141,296, Re. S.N. 140,744, Filed Apr. 16, 1980, Cl. 102/24 R, CARRIER FOR EXPLOSIVE PRIMER AND METHOD OF USING SAME, Brooke J. Calder, Jr., et al., Owner of Record: *Austin Power Company, Beachwood, Ohio,* Attorney or Agent: James H. Tilberry, Ex. Gp.: 221

4,144,708, Re. S.N. 146,387, Filed May 5, 1980, Cl. 368/232, OMNIDIRECTIONAL CLOCK, David Graham Jones, Owner of Record: *Inventor,* Attorney or Agent: John M. Prutzman, et al., Ex. Gp.: 217

4,149,551, Re. S.N. 147,023, Filed May 6, 1980, Cl. 132/7, METHOD OF CONDITIONING HAIR USING A FLEXIBLE SUBSTRATE, Lawrence Benjamin, et al., Owner of Record: *The Procter and Gamble Company, Cincinnati, Ohio,* Attorney or Agent: Richard C. Whitte, et al., Ex. Gp.: 333

4,150,764, Re. S.N. 142,950, Filed Apr. 23, 1980, Cl. 220/263, FOOT OPERATED CONTAINER AND CLOSURE DEVICE, Howard A. Anderson, Owner of Record: *Cities Service Company, Tulsa, Okla.,* Attorney or Agent: John W. Carpenter, et al., Ex. Gp.: 241

4,179,717, Re. S.N. 145,911, Filed May 2, 1980, Cl. 360/84, METHOD AND APPARATUS FOR VIDEO SIGNAL RECORDING, Alexander R. Maxey, Owner of Record: *Arvin Industries, Inc., Columbus, Ind.,* Attorney or Agent: Joseph G. Nauman, Ex. Gp.: 235

4,186,835, Re. S.N. 149,531, Filed May 13, 1980, Cl. 206/443, BOX FOR AMPOULES HAVING A PACKAGING INSERT THAT PROVIDES A CLOSURE ARRANGEMENT AND REINFORCEMENT, Otto Hofer, Owner of Record: *Interondo AG, Buchs, Switzerland,* Attorney or Agent: Edward J. Brenner, Ex. Gp.: 241

4,195,849, Re. S.N. 148,844, Filed May 12, 1980, Cl. 277/12, PISTON FLUID SEAL MOUNTING, Morris E. Taft, Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Attorney or Agent: Bradford Wiles, Ex. Gp.: 241

PATENT NOTICES

Certificates of Correction for the Week of July 15, 1980

Re. 30,249	4,170,718	4,187,798	4,195,670
D. 253,127	4,171,789	4,188,230	4,195,693
3,473,891	4,172,057	4,189,042	4,195,753
3,766,703	4,172,064	4,189,193	4,195,816
3,858,873	4,173,081	4,189,627	4,195,887
3,870,137	4,174,693	4,190,411	4,196,151
3,894,352	4,175,289	4,190,574	4,196,153
3,903,342	4,175,662	4,190,595	4,196,202
3,954,491	4,175,880	4,190,635	4,196,298
4,042,320	4,176,122	4,190,657	4,196,391
4,063,130	4,177,548	4,190,662	4,196,678
4,067,059	4,177,757	4,190,789	4,196,918
4,082,410	4,178,400	4,191,090	4,196,951
4,082,411	4,179,100	4,191,195	4,197,042
4,102,286	4,179,305	4,191,402	4,197,050
4,110,113	4,180,551	4,191,437	4,197,114
4,110,189	4,180,765	4,191,550	4,197,179
4,115,533	4,181,528	4,191,574	4,197,351
4,122,171	4,182,106	4,191,582	4,197,502
4,127,418	4,182,550	4,191,583	4,197,738
4,136,090	4,182,713	4,191,677	4,197,831
4,138,594	4,182,952	4,192,062	4,197,987
4,140,567	4,183,908	4,192,857	4,197,994
4,143,059	4,184,139	4,192,915	4,198,366
4,143,080	4,184,157	4,193,492	4,198,562
4,143,625	4,184,251	4,193,503	4,198,585
4,144,230	4,184,397	4,193,541	4,198,713
4,145,236	4,184,568	4,193,618	4,198,823
4,145,461	4,184,663	4,193,751	4,198,834
4,145,692	4,184,788	4,193,768	4,199,015
4,154,929	4,184,904	4,193,842	4,199,100
4,157,316	4,185,546	4,194,008	4,199,329
4,157,446	4,185,751	4,194,119	4,199,544
4,158,140	4,186,123	4,194,316	4,199,640
4,159,193	4,186,352	4,194,459	4,199,733
4,160,257	4,186,496	4,194,918	4,200,568
4,163,526	4,186,624	4,195,002	4,201,051
4,169,146	4,186,922	4,195,189	4,201,759
4,169,585	4,187,261	4,195,201	4,201,800
4,169,730	4,187,376	4,195,408	4,201,845
4,170,568	4,187,785	4,195,409	4,202,648
			4,202,865

Patents Available for Licensing or Sale

3,858,643. PERSONNEL SHELTER. Mr. David S. Reed, Protect-O-Dome, 6390 Pea Ridge Road, Huntington, W. Va.

4,139,102. CLOTHES HANGER RETENTION BAR. Mary J. Winton, P.O. Box 889, Placerville, Calif. 95667.

4,170,194. APPARATUS FOR APPLYING PLASTIC POWDER TO AN ARTICLE. V. Etlin, 7403 Lisle Ave., Falls Church, Va. 22043.

4,177,583. ORTHOPEDIC SHOE WITH FOREFOOT PROTECTIVE GUARD. A. W. Chapman, 5711 Woodland Drive, Western Springs, Ill. 60558.

4,184,580. COIN OPERATED BATTERY CHARGER AND CHARGING SYSTEM CHECK. Austin J. Ellis, Jr., 528 K St., Rio Linda, Calif. 95673.

4,194,711. FLEXIBLE SEWER LINE SUPPORT. Leroy Winton, P.O. Box 889, Placerville, Calif. 95667.

4,194,866. SLIVER CAN TRANSPORTING DOLLY. Correspondence to: Rieter Machine Works Ltd., 8406 Winterthur, Switzerland.

4,197,807. COLLAPSIBLE TRAFFIC CONE MARKER. Bruce E. Campbell, 2070 N. Bechelli #6, Redding, Calif. 96002.

4,203,459. CONTROLLING MECHANISM FOR SPRINKLER SYSTEM. Correspondence to: Bovard & Co., Optingenstresse 16, CH–3000, Berne 25, Switzerland.

The following two patents are offered by Bingham Associates of the Southwest, Inc., 3508 West Boyce, Fort Worth, Tex. 76133.

3,347,521. UNDERGROUND CONDUIT INSTATION TOOL.

4,132,288. SECURITY DEVICE FOR HIGH MOUNTED EQUIPMENT.

The following patent is available for licensing or sale. Correspondence to: Karl Hou, 29 Maple East St., Teaneck, N.J. 07666.

4,144,041. ADJUSTABLE THROAT VENTURI SCRUBBER.

The following patent is available for licensing or sale. Address communications to: Theodore D. Gosman, 9 Walnut Court, Huntington, N.Y. 11743.

4.173,715. ACOUSTICAL DEVICE.

The following patents are offered by: Otis Engineering Corporation, P.O. Box 34380, Dallas, Tex. 75234. Telephone (214) 323–3882.

3,454,029. VALVES.

3,533,430. SHUTTLE VALVE.

3,654,962. VALVES.

Xerxes T. Stoddard and Ruel C. Terry, co-inventors, offer to sell or grant licenses under the patents listed below. Inquiries respecting purchasing or licensing should be directed to: Ruel C. Terry, agent for the co-inventors, 3090 S. High St., Denver, Colo. 80210.

3,881,551. METHOD OF EXTRACTING IMMOBILE HYDROCARBONS.

4,019,578. RECOVERY OF PETROLEUM FROM TAR AND HEAVY OIL SANDS.

4,022,280. THERMAL RECOVERY OF HYDROCARBONS BY WASHING AN UNDERGROUND SAND.

4,051,889. HEATING FRASCH SULPHUR MINE WATER USING WASTE HEAT.

4,058,164. HEATING MINE WATER FOR RECOVERY OF IMMOBILE HYDROCARBONS.

Xerxes T. Stoddard, Vesper A. Vaseen and Ruel C. Terry, co-inventors, offer to sell or grant licenses under the patents listed below. Inquiries respecting purchasing or licensing from the above named co-inventors should be addressed to: Ruel C. Terry, agent for the co-inventors, 3090 S. High St., Denver, Colo. 80210.

4,177,246. WET OXIDATION OF MATERIALS.

4,177,249. WET OXIDATION OF SULPHUR AND THE CAPTURE OF GENERATED HEAT.

4,178,357. STRIPPING SULPHUR COMPOUNDS FROM STACK AND OTHER DISCHARGE GASES AND THE COMMERCIAL PRODUCTS DERIVED THEREFROM.

4,186,171. APPARATUS FOR THE WET OXIDATION OF SULPHUR AND THE CAPTURE OF GENERATED HEAT.

4,191,012. WET OXIDATION ENGINE.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Bldg. #500, room 218, Schenectady, N.Y. 12345.

4.185,369. METHOD OF MANUFACTURE OF COOLED TURBINE BUCKET.

Applications for license may be addressed to: Patent Counsel Division, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

3,769,538. VACUUM ARC DEVICES WITH FERROUS ELECTRODES.

4,048,456. PUFFER-TYPE GAS-BLAST CIRCUIT BREAKER.

Application for license may be addressed to: the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,390,832. HEAVY MOTOR MOUNTING FOR DIRECT BLOWER ASSEMBLY.

3,621,730. WASHING MACHINE WITH DUAL SPEED CYCLE CONTROL MEANS.

3,673,823. SMALL OR LARGE LOAD AUTOMATIC WASHER.

3,838,733. CONTROL SYSTEM FOR MULTIPLE ZONE HEATING AND COOLING.

3,910,061. SAFETY CONDENSATE OVERFLOW SYSTEM.

3,942,341. ADDITIVE DISPENSING SYSTEM.

3,942,705. PROTECTION FOR ALUMINUM TUBING DURING ULTRASONIC SOLDERING.

3,949,576. LIQUID FLOW DIVERSION ARRANGEMENT.

3,952,556. LIQUID FLOW DIVERSION ARRANGEMENT.

4,071,045. CHECK VALVE CONSTRUCTION.

4,180,807. CHARGE TRANSFER CIRCUIT WITH VOLTAGE THRESHOLD COMPENSATING MEANS.

4,192,149. POST CONDENSER LOOP CASE HEATER CONTROLLED BY AMBIENT HUMIDITY.

4,193,488. COIN-OPERATED WASHING MACHINE CYCLE TIME REDUCER.

4,196,952. CABINET CORNER CAP ASSEMBLY.

4,199,205. REFRIGERATOR CABINET CONSTRUCTION.

Applications for licenses may be addressed to the General Electric Company, Component Motor Division, 1635 Broadway, Fort Wayne, Ind. 46804, Attention, Patent Counsel.

4,041,360. CONTROL CIRCUIT FOR AN ELECTRIC MOTOR.

4,051,595. METHODS FOR SETTING INSULATORS AND PRESSING END TURNS.

4,054,349. APPARATUS FOR ESTABLISHING MULTIPOINT ELECTRICAL CONTACT WITH AN INSULATED CONDUCTOR.

4,188,145. ASSEMBLY AND METHOD OF ASSEMBLING.

Application for license may be addressed to: the General Electric Company, Patent Counsel Division, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,193,049. ULTRASONIC TOUCH CONTROL PANEL.

D. 254,048. DESIGN FOR AN ELECTRIC PEELING WAND OR SIMILAR ARTICLE.

Applications for license may be addressed to: Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Bldg., 2500, Room 218, Schenectady, N.Y. 12345.

4,177,011. BAR FOR SEALING THE GAP BETWEEN ADJACENT SHROUD PLATES IN LIQUID-COOLED GAS TURBINE.

4,185,455. FUEL PULSATION-SUPPRESSION FOR GAS TURBINE COMBUSTION SYSTEM.

Applications for license may be addressed to the General Electric Company, Aircraft Engine Group, 1000 Western Ave., Lynn, Mass. 01910. Attention: Patent Counsel.

3,762,835. FOREIGN OBJECT DAMAGE PROTECTION FOR COMPRESSOR BLADES AND OTHER STRUCTURES AND RELATED METHODS.

3,767,479. MULTICOMPONENT EUTECTICS FOR HIGH TEMPERATURE APPLICATIONS.

3,781,782. DIRECTIVE ACOUSTIC ARRAY FOR NOISE SOURCE LOCALIZATION.

3,844,845. DIRECTIONAL COMPOSITES BY SOLID-STATE UP-TRANSFORMATION.

3,847,679. DIRECTIONAL EUTECTOID COMPOSITES BY SOLID-STATE UP-TRANSFORMATION.

3,850,261. WIDE BAND WIDTH SINGLE LAYER SOUND SUPPRESSING PANEL.

3,850,702. METHOD OF MAKING SUPERALLOY BODIES.

3,942,581. METHOD AND APPARATUS FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES.

3,979,534. PROTECTIVE COATINGS FOR DISPERSION STRENGTHENED NICKEL-CHROMIUM ALLOYS.

4,013,141. MEANS FOR LUBRICATING A MECHANISM DISPOSED WITHIN A ROTATING SHAFT.

4,032,912. INTENSITY MODULATED DISPLAY SYSTEM.

4,060,329. METHOD AND APPARATUS FOR MEASURING DEFLECTION OF ROTATING AIRFOILS.

4,091,892. PHASED TREATMENT NOISE SUPPRESSOR FOR ACOUSTIC DUCT APPLICATIONS.

4,123,196. SUPERSONIC COMPRESSOR WITH OFF-DESIGN PERFORMANCE IMPROVEMENT.

4,149,824. BLADE CONTAINMENT DEVICE.

4,169,692. VARIABLE AREA TURBINE NOZZLE AND MEANS FOR SEALING SAME.

4,189,939. COMPACT MULTIMISSION AIRCRAFT PROPULSION SIMULATOR.

Application for license under these patents may be addressed to: Patent Counsel, Ordnance Systems Department, General Electric Company, 100 Plastics Ave., Pittsfield, Mass. 02101.

4,036,344. MULTIPLE-PLATE CLUTCH.

4,079,687. TORPEDO TARGET ACQUISITION.

Application for license may be addressed to the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,507,193. HERMETIC MOTOR COMPRESSOR CRANKCASE VENTING SYSTEM.

3,532,448. ROTARY COMPRESSOR.

3,568,712. SUCTION VALVE FOR ROTARY COMPRESSOR.

3,602,007. REFRIGERATOR INCLUDING THROUGH-THE-DOOR ICE SERVICE.

3,605,509. LOST MOTION MECHANISM FOR COIN-OPERATED TIMER RUN TIME ACCUMULATOR.

3,619,641. AUXILIARY STARTER DEVICE FOR AIR CONDITIONER COMPRESSOR.

3,765,100. CAPACITIVE SENSING DRYER CONTROL.

3,883,204. ICE BUCKET RETRIEVING APPARATUS OF A REFRIGERATOR.

3,907,050. HEAT EXCHANGE HOUSING.

4,184,661. DISCONNECTABLE COUPLING FOR A SPLIT SYSTEM AIR CONDITIONER.

4,186,563. COOLING EFFICIENCY METER CIRCUIT FOR AN AIR CONDITIONER.

4,186,945. TRANSITION SLEEVE FOR A CABINET OR THE LIKE.

4,187,691. HEAT DUMP BYPASS VALVE ARRANGEMENT.

4,190,305. STRUCTURAL SUPPORT FOR A REFRIGERATOR.

4,191,025. FLUID SUPPLY SYSTEM FOR A DOMESTIC APPLIANCE.

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4,187,443. COLOR PICTURE TUBE HAVING IMPROVED CORRUGATED APERTURED MASK AND METHOD OF MAKING SAME.

4,188,123. OPTICALLY MEASURING THE CARRIER CONCENTRATION IN A SEMICONDUCTOR.

4,188,583. SAMPLING METHOD AND APPARATUS.

4,188,588. CIRCUITRY WITH UNBALANCED LONG-TAILED-PAIR CONNECTIONS OF FET'S.

4,188,593. RC OSCILLATOR.

4,189,682. MICROWAVE FET POWER CIRCUIT.

4,189,688. MICROWAVE FET POWER OSCILLATOR.

4,189,714. ANALOG-TO-DIGITAL CIRCUIT WITH ADJUSTABLE SENSITIVITY.

4,189,735. RECORD PLAYBACK APPARATUS AND INFORMATION RECORD THEREFOR.

4,189,746. METHOD AND APPARATUS FOR DETERMINING FOCUS CONDITIONS.

4,189,782. MEMORY ORGANIZATION.

4,189,814. APPARATUS AND METHOD FOR AUTOMATICALLY ALIGNING A MULTIBEAM ELECTRON GUN ASSEMBLY WITH A CATHODE-RAY TUBE BULB.

4,189,940. ENGINE FAULT DIAGNOSIS.

4,190,053. APPARATUS AND METHOD FOR HYPERTHERMIA TREATMENT.

4,190,735. SEMICONDUCTOR DEVICE PACKAGE.

4,190,791. SWITCHING REGULATOR FOR TELEVISION DEFLECTION CIRCUIT WITH IMPROVED ULTOR VOLTAGE REGULATION.

4,190,843. RECORDING METHODS FOR A MULTILAYER OPTICAL RECORD.

4,190,863. REMOTE CONTROL SYSTEM FOR A TELEVISION CAMERA.

4,190,864. REMOTE IRIS CONTROL FOR TELEVISION CAMERAS.

4,190,865. VIDEO IMAGE TUBE HIGHLIGHT SUPPRESSION CIRCUIT.

4,190,936. APPARATUS AND METHOD FOR DETERMINING DEVIATION OF MASK-TO-FACEPLATE SPACING IN A CATHODE-RAY USE.

4,190,987. DOUBLE DOME HEAT AND SMOKE VENT STRUCTURE.

4,191,295. PROCESSING RACK.

4,191,380. VIDEO DISC PLAYER HAVING UNITARY RECORD HANDLING PLATFORM CONSTRUCTION.

4,191,381. APPARATUS FOR FACILITATING CARRIAGE RETURN IN VIDEO DISC PLAYER.

4,191,895. LOW NOISE CCD INPUT CIRCUIT.

4,191,896. LOW NOISE CCD INPUT CIRCUIT.

4,191,936. IMAGE PICKUP ASSEMBLY.

4,191,941. SWITCH MATRIX FOR DATA TRANSFERS.

4,191,966. CATV BLOCK CONVERTER.

4,191,971. SYSTEM FOR CONNECTING A PLURALITY OF VIDEO SENDING TELEVISION APPARATUS.

4,191,975. DIGITAL PHASE SYNCHRONIZING SYSTEM.

4,193,018. DEFLECTION CIRCUIT.

4,193,691. SPECTROMETER.

4,194,184. BIDIRECTIONAL DIGITAL POSITION ENCODER.

4,194,285. METHOD OF MAKING A FIELD EFFECT TRANSISTOR.

4,194,463. APPARATUS FOR APPLYING SEALING MATERIAL TO A CATHODE-RAY TUBE.

4,194,912. WATER BASED PHOTORESIST.

4,195,248. COLOR PICTURE TUBE HAVING IMPROVED CORRUGATED MASK.

4,195,269. TWO-WAY SINGLE FIBER OPTICAL COMMUNICATION SYSTEM.

4,195,308. OHMIC CONTACT FOR P TYPE INDIUM PHOSPHIDE.

4,195,309. VIDEO PROCESSING SYSTEM INCLUDING COMB FILTERS.

4,195,312. RECORDER AND ANTIREFLECTIVE RECORD BLANK HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER.

4,195,313. ANTIREFLECTIVE INFORMATION RECORD HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER.

4,198,614. DEFLECTION YOKE ASSEMBLY INCLUDING A BEAM POSITIONING MAGNET ARRANGEMENT.

4,198,640. REFLECTARRAY ANTENNA.

4,198,641. ROTATING FIELD POLARIZATION ANTENNA SYSTEM.

4,198,652. D.C. GAIN CONTROLLED AMPLIFIER.

4,198,658. RECORDING/PLAYBACK APPARATUS FACILITATING TRACK SKIP DETECTION.

4,199,384. METHOD OF MAKING A PLANAR SEMICONDUCTOR ON INSULATING SUBSTRATE DEVICE UTILIZING THE DEPOSITION OF A DUAL DIELECTRIC LAYER BETWEEN DEVICE ISLANDS.

4,199,386. METHOD OF DIFFUSING ALUMINUM INTO MONOCRYSTALLINE SILICON.

4,199,691. CCD MULTIPLE CHANNEL NETWORK.

4,199,702. ELECTRON MULTIPLIER INPUT ELECTRON OPTICS.

4,199,705. MODULATOR STRUCTURE FOR A FLAT PANEL DISPLAY DEVICE.

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4,199,773. INSULATED GATE FIELD EFFECT SILICON-ON-SAPPHIRE TRANSISTOR AND METHOD OF MAKING SAME.

4,199,776. INTEGRATED INJECTION LOGIC WITH FLOATING REINJECTORS.

4,199,787. INTERCARRIER SOUND SYSTEM.

4,199,860. METHOD OF INTEGRATING SEMICONDUCTOR COMPONENTS.

4,200,274. FIXTURE FOR HOLDING A FACEPLATE AND A FUNNEL OF A CRT DURING SEALING.

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4,196,370. CRT GENERATING THREE INLINE BEAMS AND HAVING SHUNTS FOR WEAKENING CENTER BEAM HORIZONTAL MAGNETIC DEFLECTION AND STRENGTHENING VERTICAL DEFLECTION.

4,196,372. PICK-UP TUBE HAVING BIAS LIGHTING AND CONTROLS THEREFOR.

4,196,438. ARTICLE AND DEVICE HAVING AN AMORPHOUS SILICON CONTAINING A HALOGEN AND METHOD OF FABRICATION.

4,196,443. BURIED CONTACT CONFIGURATION FOR CMOS/SOS INTEGRATED CIRCUITS.

4,196,457. MAGNETIC TAPE ROTARY HEADWHEEL ASSEMBLY WITH VENTING MEANS.

4,196,507. METHOD OF FABRICATING MNOS TRANSISTORS HAVING IMPLANTED CHANNELS.

4,196,906. VIDEO DISC PLAYER.

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4,197,557. BRIGHTNESS CONTROL CIRCUIT EMPLOYING A CLOSED CONTROL LOOP.

4,197,558. OVERLOAD PROTECTION CIRCUIT FOR VIDEO AMPLIFIERS.

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4,198,246. PULSED LASER IRRADIATION FOR REDUCING RESISTIVITY OF A DOPED POLYCRYSTALLINE SILICON FILM.

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4,198,581. TEMPERATURE COMPENSATING COMPARATOR.

4,198,611. REDUNDANCY SYSTEM WITH EIGHT DEVICES FOR FIVE CHANNELS.

The Electric Power Research Institute offers to grant nonexclusive licenses on reasonable terms and conditions under these patents listed below. Inquiries respecting licenses should be addressed to John P. Taylor, Manager of Patent Administration and Licensing, Electric Power Research Institute, P.O. Box 10412, Palo Alto, Calif. 94303.

4,102,220. MULTI-RING INERTIAL ENERGY STORAGE WHEEL HAVING TAPERED RING MOUNTING MEMBERS.

4,112,785. RING ASSEMBLY FOR INERTIAL ENERGY STORAGE ROTOR.

4,161,715. METHOD AND APPARATUS FOR MEASURING THE INTERIOR DIMENSIONS OF A HOLLOW BODY.

4,150,582. ROTOR RING FOR INERTIAL ENERGY STORAGE ROTOR.

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4,102,175. RESPONSE TIME VERIFICATION OF IN SITU HYDRAULIC PRESSURE SENSORS IN A NUCLEAR REACTOR.

4,154,361. QUICK OPENING PRESSURE RELEASE DEVICE AND METHOD.

4,151,747. MONITORING ARRANGEMENT UTILIZING FIBER OPTICS.

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National Technical Information Service

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

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U.S. DEPARTMENT OF AGRICULTURE
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U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

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U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

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U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

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Patent 4,171,615. Supercharged Topping Rocket Propellant Feed System. Filed Apr. 21, 1966. Patented Oct. 23, 1979. Not available NTIS.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 14, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-5-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	10-15-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-27-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	10-10-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-18-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-17-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-11-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	2-1-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,091,768 to 3,095,571, inclusive
Plant Patents..... Numbers 2,262 to 2,268, inclusive

REISSUES

JULY 15, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

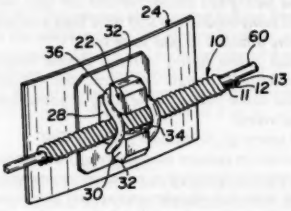
Re. 30,332
MULTI-STRANDED COILED ORTHODONTIC ARCH WIRE

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Original No. 4,086,702, dated May 2, 1978, Ser. No. 708,304, Jul. 26, 1976. Application for reissue Dec. 8, 1978, Ser. No. 967,723

Int. Cl.[2] **A61C** *7/00*

U.S. Cl. 433—20 **60 Claims**



1. An orthodontic arch wire adapted to be connected to an orthodontic bracket mounted on a malocclude tooth, the arch wire comprising a plurality of adjacent strands coiled in the form of a tightly wound elongated coiled wire normally having an array of interleaved turns of and generally parallel, and having a lumen extending therethrough, said strands when formed into said turns having a predetermined radial thickness (t), said turns having a common internal dimension (d-FIG. 2; s1-FIG. 9) of said lumen no greater than two times said predetermined radial thickness (t) of said strands and having a common outer dimension no greater than approximately 0.025 inches, said strands being made from a material sufficiently elastic to at least permit bending of the arch wire over a short length thereof by selectively and at least partially separating adjacent turns, and to provide sufficient stiffness over a long length to provide adequate anchoring characteristics for orthodontic devices attached thereto.

Re. 30,333
EBULLIENT COOLED TURBOCHARGER BEARING HOUSING

Phillip B. Gordon, Jr., Washington, and Keats E. Hunt, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Original No. 4,107,927, dated Aug. 22, 1978, Ser. No. 745,743, Nov. 29, 1976. Application for reissue Jan. 29, 1979, Ser. No. 7,094

Int. Cl.[2] **F02B** *37/00*

U.S. Cl. 60—605 **4 Claims**

1. In a turbocharged, internal combustion engine system, the combination of:

a liquid cooled, internal combustion engine;

a heat exchanger for cooling the liquid from the engine;

a turbocharger including a rotary turbine and a rotary compressor, housings containing the turbine and the compressor, a shaft interconnecting the turbine and the compressor and bearings journalling the shaft within the housing adjacent the turbine;

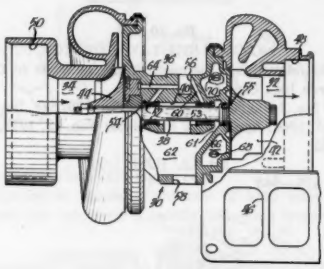
means for directing exhaust gases from said engine to said turbine to drive the same;

means for directing air from said compressor to the engine;

a liquid passage in said housing operatively interposed between said turbine and said bearings and having a lower inlet and an upper outlet;

means for directing liquid coolant from said engine to said inlet; and

means for directing coolant from said outlet to said heat exchanger whereby thermosiphoning of said coolant through said passage will occur when said engine is not operative and ebullient cooling of said housing immediately adjacent said bearings will occur *due* to the presence



of liquid in said passage to thereby prevent excessive heat buildup in said housing even when said engine is not operative and thereby prevent thermal damage to said bearings.

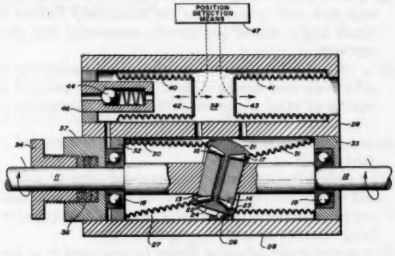
Re. 30,334
PRESSURE COMPENSATED HERMETICALLY SEALED TRANSMISSION SYSTEM

Carl R. Coles, Michigan City, Ind., assignor to Zero-Seal, Inc., Arlington Heights, Ill.

Original No. 3,933,052, dated Jan. 20, 1976, Ser. No. 516,206, Oct. 21, 1974. Application for reissue Mar. 7, 1977, Ser. No. 774,590

Int. Cl.[2] **F16J** *15/50*

U.S. Cl. 74—18.1 **26 Claims**



1. A power transmission device comprising

a. a hermetically sealed chamber having *an interior surface,* a first opening in a first wall of said chamber, and a second opening in an opposing rear wall of said chamber, said openings having a common axis;

b. rigid transmission means, capable of being wobbled, non-rotatably engaging the interior [wall] *surface* of said chamber, said transmission means being arranged to wobble about a substantially fixed point lying substantially along said common axis;

c. a first flexible imperforate membrane engaging said transmission means and sealing said first opening;

d. a second flexible imperforate membrane engaging said transmission means and sealing said second opening;

e. a rotatable driving member external to said chamber and extending through said first opening of said chamber;
f. a driven member external to said chamber and extending through said second opening of said chamber;
g. means coupling said driving member to said transmission means for converting the rotary motion of said driving member into a wobbling motion of said transmission means; and
h. means coupling said transmission means to said driven means for converting the motion of said transmission means into a rotating motion of said driven means.

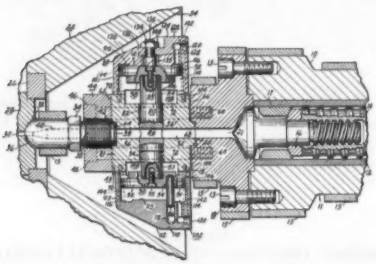
Re. 30,335
NOZZLE SHUT-OFF DEVICE

Oskar R. Johansson, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Original No. 3,500,501, dated Mar. 17, 1970, Ser. No. 701,699, Jan. 30, 1968. Application for reissue Feb. 13, 1978, Ser. No. 877,565

Int. Cl.[2] B29F *1/03*

U.S. Cl. 425—548 **7 Claims**



11. In an injection molding apparatus comprising a temperature controllable cylinder having a nozzle attached to one end thereof, means for forcing molten material from said cylinder through a passageway formed in said nozzle, a platen with a mold having a sprue formed therein, which sprue is in communication with said passageway formed in said nozzle, and a nozzle shut-off valve interposed between said nozzle and said cylinder, the improvement comprising:

(a) a valve body having a first passageway in axial alignment with both said cylinder and the passageway formed in said nozzle and a second passageway intersecting said first passageway;

(b) a valve spool reciprocable in the second passageway of said valve body and having a third passageway parallel to and capable of axial alignment with the first passageway of said valve body;

(c) a piston attached in an axial direction to each end of said valve spool;

(d) a cylinder peripherally encompassing each of said pistons and having one closed end and one open end with said open end being adjacent to said valve body and said cylinders each being attached to said valve body;

(e) a piston-stroke adjusting means incorporated in at least one of said cylinders;

(f) a source of fluid under pressure; and

(g) means to connect said source of fluid under pressure alternately to said cylinders, to pressurize one and vent the other of said cylinders, thereby causing said pistons and valve spool to reciprocate in unison, thus in one position blocking the first passageway in said valve body and in the other position axially aligning the third passageway in said valve spool with the first passageway in said valve body, thereupon allowing molten material to enter said nozzle from said temperature controllable cylinder.

12. In an injection molding apparatus comprising a temperature controllable cylinder having a nozzle attached to one end thereof, means for forcing molten material from said cylinder through a passageway formed in said nozzle, a platen with a mold having a sprue formed therein, which sprue is in communication with said passageway formed in said nozzle, and a nozzle shut-off valve interposed between said nozzle and said cylinder, the improvement comprising:

(a) a valve body having a first passageway in axial alignment with both said cylinder and the passageway formed in said nozzle and a second passageway intersecting said first passageway;

(b) a valve spool reciprocable in the second passageway of said valve body and having a third passageway parallel to and capable of axial alignment with the first passageway of said valve body;

(c) a piston attached in an axial direction to each end of said valve spool;

(d) a cylinder peripherally encompassing each of said pistons and having one closed end and one open end with said open end being adjacent to said valve body and said cylinders each being attached to said valve body;

(e) said platen having a recess therein located and sized to substantially contain said nozzle shut-off valve;

(f) said nozzle shut-off valve being disposed substantially within said recess;

(g) a source of fluid under pressure; and

(h) means to connect said source of fluid under pressure alternately to said cylinders, to pressurize one and vent the other of said cylinders, thereby causing said pistons and valve spool to reciprocate in unison, thus in one position blocking the first passageway in said valve body and in the other position axially aligning the third passageway in said valve spool with the first passageway in said valve body, thereupon allowing molten material to enter said nozzle from said temperature controllable cylinder.

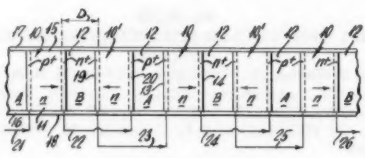
Re. 30,336
SOLAR-CELL ARRAY

Roy Kaplow, Newton; Robert I. Frank, Lexington, and Joel L. Goodrich, Quincy, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Original No. 4,129,458, dated Dec. 12, 1978, Ser. No. 877,356, Feb. 13, 1978. Application for reissue Apr. 27, 1979, Ser. No. 33,991

Int. Cl.[2] H01L *31/06*

U.S. Cl. 136—89 PC **16 Claims**



15. A semiconductor solar-cell array comprising a plurality of spaced, elongate, parallel units formed from a common substrate and comprised of a first conductivity type, the body material of each of said units having the same spaced relation to the body material of other of said units as in the original substrate from which they are formed, each unit having upstanding sidewalls and having therebetween an upper surface adapted for exposure to receive incident radiation, adjacent pairs of sidewalls at first spaces between adjacent units each including a region of a second conductivity type, adjacent pairs of sidewalls at second spaces between adjacent units being devoid of second conductivity-type regions, first-space pairs of sidewalls being in alternating interlace with second-space pairs of sidewalls in a given direction of traverse of the units of said array, and means interconnecting said units for combining the individual electrical outputs of said units, said means comprising separate conductive connections establishing ohmic contact with the respective sidewall regions of said units.

Re. 30,337
TEXTILE TREATMENT COMPOSITION

Basil L. Loudas, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Original No. 4,043,923, dated Aug. 23, 1977, Ser. No. 446,003, Feb. 26, 1974. Application for reissue Nov. 27, 1978, Ser. No. 964,063

Int. Cl.[2] **C08K** *5/02, 5/05;* **D06M** *13/00*

U.S. Cl. 252—8.75 **14 Claims**

1. A composition comprising a liquid vehicle containing from about 1% to about 25% by weight of a detergent-compatible organic fluorochemical compound containing about 10 to 60 weight percent carbon-bonded fluorine and having the formula $(R_fQ)_e(XCO)_mA(COOM)_p$ where R_f is fluorinated aliphatic radical of at least three carbon atoms, "Q" is a divalent linking group, "M" is a cation selected from NH_4^+, Na^+, K^+, Li^+, H^+ or is a protonated alkyl amine having from 1–6 carbon atoms in the alkyl group "A" is a polyvalent organic radical having a valency of m+p and is the residue of a polybasic organic acid or an organic anhydride, "X" is NR (wherein R is hydrogen or an alkyl group of from 1 to 14 carbon atoms), *or* N [or O] and e, p and m are integers of 1 or 2.

Re. 30,338
ORGANOTIN STABILIZER COMPOSITION CONTAINING MORE THAN 20 PERCENT TIN AND RESIN COMPOSITIONS CONTAINING THE SAME

Otto S. Kauder, New York, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Original No. 3,632,538, dated Jan. 4, 1972, Ser. No. 635,658, May 3, 1967. Application for reissue Aug. 28, 1978, Ser. No. 937,677

Int. Cl.[2] **C08K** *5/58*

U.S. Cl. 260—23 XA **16 Claims**

1. A stabilizer composition for improving the resistance to deterioration of polyvinyl chloride resins when heated at 350° F., consisting essentially of an organotin alpha- or beta-mercapto carboxylic acid ester having the formula

$$[R_2'-Sn+S-Z-(COOR'')_m-]_{4-m}$$
$$R_2'Sn-[S-Z_1-(COOR'')_m]_2$$

wherein R′ is an alkyl radical linked to tin through carbon and having from one to about eight carbon atoms, Z is a bivalent alkylene radical having from one to about two carbon atoms, and carrying the —S— and —COOR″ groups, and R″ is an organic group derived from a monohydric or polyhydric alcohol having from one to about two hydroxyl groups and from one to about fifteen carbon atoms, *and* m is an integer from 1 to 2, [and n is an integer from 1 to 2,] the S—Z—$(COOR'')_m$ group being derived from an alpha- or beta-mercaptocarboxylic acid ester; and an organotin sulfide having the formula R_2SnS, in which R is alkyl linked to tin through carbon and has from one to about eight carbon atoms, the organotin compounds together comprising an amount of tin within the range from about 20 to about 35% by weight, and an amount of sulfur within the range from about 10 to about 35% by weight.

Re. 30,339
CONVERSION OF ACID S, PRODUCED BY THE ORGANISM *POLYANGIUM CELLULOSUM* VAR. *FULVUM* INTO ACID F

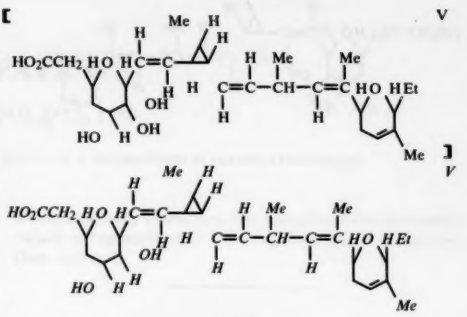
David T. Connor, Ann Arbor, Mich., and Maximilian von Strandtmann, New Castle, Del., assignors to Warner-Lambert Company, Morris Plains, N.J.

Original No. 4,076,940, dated Feb. 28, 1978, Ser. No. 794,180, May 5, 1977. Application for reissue Jul. 14, 1978, Ser. No. 924,469

Int. Cl.[2] **C09B** *23/00*

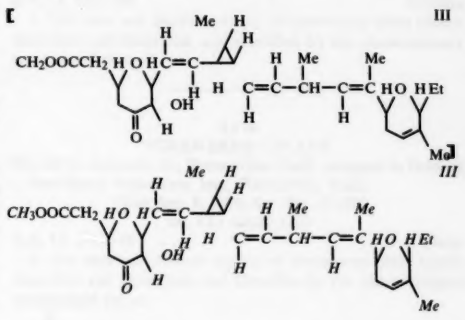
U.S. Cl. 542—430 **3 Claims**

1. A process for preparing the substance acid F (V) having the following formula:

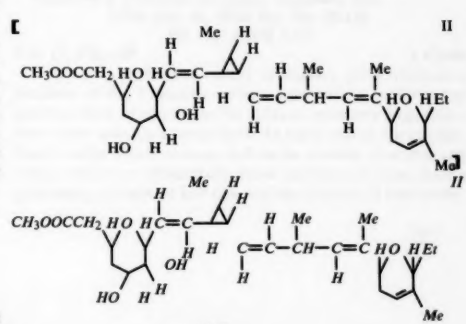


which comprises the following steps:

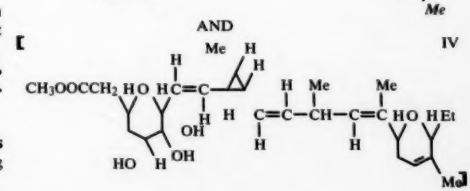
A. Reducing an alcoholic solution of keto ester S (III) wherein the keto ester S has the following formula:



with an alkali metal borohydride to obtain a mixture of acid S methyl ester II and acid F methyl ester IV having the following formulas:



AND



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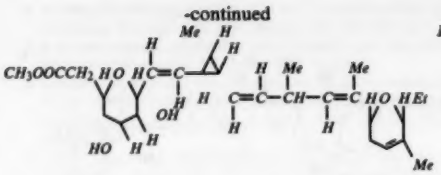


IV

B. Separating acid S methyl ester II and acid F methyl ester IV by preparative thin layer chromatography;

C. Hydrolyzing acid F methyl ester IV to obtain the desired acid F (V).

PLANT PATENTS

GRANTED JULY 15, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,570
NECTARINE TREE

Jonathan P. Chakerian, and Dennis G. Surabian, both of Reedley, Calif., assignors to Surabian Brothers, Reedley, Calif.

Filed Feb. 23, 1979, Ser. No. 14,740
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by its bearing of semi-freestone, yellow fleshed fruit which is of large size for its relatively early ripening season; and by its general resemblance to the Armking Nectarine Tree (U.S. Plant Pat. No. 2,943), which it most nearly resembles, but from which it is distinguished by its fruit ripening from five to seven days earlier, having firmer flesh, and being more rounded.

4,571
PEACH TREE

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Jan. 22, 1979, Ser. No. 5,578
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, as illustrated and described, characterized by its regular and productive bearing of large size, yellow flesh, firm, freestone fruit, with excellent eating and shipping quality and is further characterized — by having attractive red skin color, uniform ripening and maturing two weeks before O'Henry Peach (U.S. Plant. Pat. No. 2,964).

4,572
PEACH CULTIVAR

Catherine H. Bailey, Englishtown, and L. Fredric Hough, Bloomsbury, both of N.J., assignors to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Mar. 28, 1979, Ser. No. 24,713
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of yellow freestone peach tree, substantially as illustrated and described, characterized by a strong, vigorous growth habit, the exceptional winter hardiness of the fruit buds, improved tolerance to bacterial leaf spot, and the ability to yield large round firm globose bright red colored slow softening fruit having a rich and delicious flower which commonly ripens very late with that of the Autumnglo variety and approximately 3 to 5 days after that of the Rio Oso Gem variety.

4,573
STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed Apr. 4, 1979, Ser. No. 27,194
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—48 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

4,574
STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed Apr. 4, 1979, Ser. No. 27,195
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—48 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

4,575
RHUBARB PLANT - K-1 VARIETY

Larry A. Krieger, Bridgman, Mich., assignor to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Apr. 11, 1979, Ser. No. 29,150
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—89 **1 Claim**

1. A new and distinct variety of rhubarb plant which is a mutation of the Valentine variety, substantially as illustrated and described, characterized by stalks of extremely large diameter, stalks which are red on both the inside and on the outside, tender stalks which cook-up well in the absence of strings and which require a substantially lesser quantity of sugar during processing, prominent leaf ribs, and the absence of seed stalks.

PATENTS

GRANTED JUL. 15, 1980

ERRATA

For CLASS	See PATENT NO.
433–030	4,212,105
368–062	4,212,153
368–248	4,212,154
368–250	4,212,155
368–085	4,212,156
368–087	4,212,157
368–080	4,212,158
368–082	4,212,159
024–073 R	4,212,251
274–037	4,212,490
430–494	4,212,672
430–496	4,212,673
427–389.8	4,212,697
568–313	4,212,825
568–347	4,212,827
568–314	4,212,828
568–433	4,212,829
568–486	4,212,830
568–017	4,212,831
425–230	4,212,851
528–495	4,212,951
375–097	4,213,006
375–010	4,213,007
370–100	4,213,011
370–012	4,213,094
375–014	4,213,095
455–260	4,213,096

PATENTS

GRANTED JULY 15, 1980

GENERAL AND MECHANICAL

4,212,087

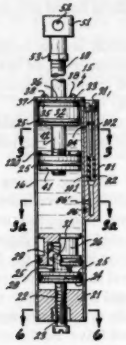
PROSTHETIC LEG WITH A HYDRAULIC CONTROL

LaVaugh L. Mortensen, 10533 San Anselma Ave., South Gate, Calif. 90280

Filed Nov. 16, 1978, Ser. No. 961,114

Int. Cl.[2] A61F *1/00, 1/08*

U.S. Cl. 3—1.2 **9 Claims**



1. A leg prosthetic comprising:

an upper thigh member;

a lower shank member;

a knee joint pivotably connecting said members; and

first means pivotably connected between said members for control of said knee joint and comprising:

a cylinder having a head end and a crank end, and pin-connected at said head end to one of said members;

a piston slidably disposed within said cylinder with sealing means therebetween;

a connecting rod connected at one end to said piston and extending out of said crank end, and having the other end thereof pin-connected to the other one of said members;

second means for slidably sealing said crank end around said rod;

a first one-way by-pass valve and a second one-way by-pass valve disposed exterior of said cylinder and each having an inlet port and an outlet port;

said cylinder having a first pair of radial ports and a second pair of radial ports, spaced axially from said first pair;

said inlet port of said first valve and said outlet port of said second valve, each communicating with a respective one of said first pair of radial ports;

said outlet port of said first valve and said inlet port of said second valve each communicating with a respective one of said second pair of radial ports; and

hydraulic fluid disposed within said cylinder.

4,212,088

APPARATUS FOR CLEANING SWIMMING POOLS

John M. Goettl, Phoenix, Ariz., and George J. Ghiz, 4736 E. Palo Verde, Phoenix, Ariz. 85018, assignors to George J. Ghiz, Phoenix, Ariz.

Division of Ser. No. 832,464, Sep. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 616,677, Sep. 25, 1975, abandoned. This application May 18, 1978, Ser. No. 907,113

Int. Cl.[2] E04H *3/20;* **B08B** *3/02;* **B05B** *15/10*

U.S. Cl. 4—490 **6 Claims**

1. A system for cleaning the inner surfaces of a swimming pool, said pool having

means for introducing water under pressure into said pool,

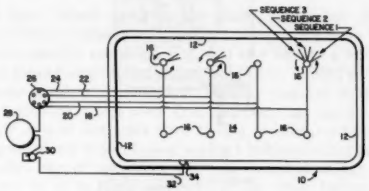
means for withdrawing water containing suspended deleterious matter from said pool and conducting said water to a filter where said suspended deleterious matter is separated from said water, and

means for returning said filtered water from said filter to said pool,

said system comprising a water delivery assembly located upon the inner surface of said swimming pool, said assembly comprising:

(a) a housing in fluid communication with a source of water under pressure, said housing having an outer open end communicating with the interior of said swimming pool;

(b) a rotatable water delivery head formed as a single moving part having an upper end and at least one water aperture therein to project a pressurized stream of water in adjacent parallel and scrubbing relation to the inner surface of said pool, said delivery head being mounted in said housing and adapted for reciprocal motion therewithin to an extended operative position and a retracted inoperative position, said delivery head also adapted for limited random rotation only when positioned between said extended operative position and said retracted inoperative position;



(c) said water delivery head responsive to the application of pressurized water to said housing for extending non-rotational to said extended operative position; said head also responsive to the removal of pressure from the water in said housing for retraction to said retracted inoperative position;

(d) means responsive to the application of pressurized water to said housing for rotating said delivery head a randon angular distance during movement between its retracted inoperative position and extended operative position; and

(e) means for stopping rotation of said delivery head when it is in its extended operative position to permit the projection therefrom of a pressurized stream of water, in a random direction, of sufficient velocity to clean the inner surface of said pool, said means for stopping said rotation comprising a radially extending collar on said delivery head, and an annular ledge in said housing, friction means on said collar and ledge coming into contact with each other when said head is in said extended position to stop rotation of said rotatable water delivery head.

4,212,089

PROCESS FOR AROMATIZING AND/OR DEODORIZING THE ENVIRONMENT SURROUNDING THE FLUSH TANK OF A TOILET

Jerome Lindauer, Hillsdale, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 958,492, Nov. 7, 1978, Pat. No. 4,168,550. This application Apr. 24, 1979, Ser. No. 32,747

Int. Cl.[3] E03D *9/02*

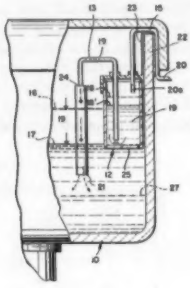
U.S. Cl. 4—228 **14 Claims**

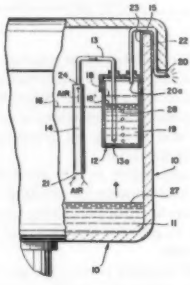
1. A process comprising the steps of dispensing a measured

amount of odorant or deodorant vapor into the atmosphere surrounding a flush tank toilet and simultaneously dispensing a measured amount of one or more solutions selected from the group consisting of a cleanser solution, a sanitizer solution, an aromatizer solution and a deodorizer solution into the liquid stored in the flush tank by using apparatus wherein said flush tank is of the type which retains a flushing liquid which lowers and rises between a first upper level and a second lower level during flushing, said apparatus including:

(i) container means for retaining the additive liquids in solution;

(ii) first conduit means having outlet opening means and inlet opening means, said first conduit means communicating between said container means and an inlet opening means positionable in said flush tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below





the inlet opening means, said inlet opening means being positionable sufficiently below said first level for the flushing liquid to force air through the first conduit means into the container means as the flushing liquid level rises above the inlet opening means towards said first level; said first conduit means also communicating between said additive liquid in the container means and said outlet opening means positionable in said tank for passage of additive liquid into the flushing liquid whereby the level of said outlet opening means is substantially below the bottom level of said solution in said dispensing apparatus, said apparatus having in combination:

a. said first conduit means which communicates between said container means and said inlet opening means consisting essentially of a first tube having a first inside diameter and a second tube having a second inside diameter, said first tube being positioned from a point in proximity to the bottom of said container means and passing through the top of said container means above the level of said additive liquid solution and then in a downward direction to a point which is at substantially a level identical to the level of the bottom of said container means which retains said additive liquid solution, the end of said first tube having said first inside diameter being said outlet opening means for said conduit means for passage of additive liquid into the flushing liquid, said outlet of said first tube being fixedly connected in a sealed manner to said second tube having said second inside diameter, said second tube having said second inside diameter passing from said outlet means of said first tube to said inlet opening means positionable in said tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below the inlet opening means, and

b. a second conduit means communicating from a level above the highest level of the additive liquid solution retained in said container means into the air surrounding said flush tank;

c. the ratio of said second inside diameter to said first inside diameter being in the range of from about 2:1 up to about 5:1,

whereby during the flushing, during the first cycle thereof, when the flushing liquid lowers from the first upper level to the second lower level, additive liquid is siphoned from said container means into said flushing liquid and during the second phase of the flushing cycle, when the flushing liquid rises from said second lower level to said first upper level, air forced into said second tube of said first conduit means and into said container means in the form of air bubbles which travel to the upper level of said additive liquid solution held within said container means and whereby aromatizing or deodorizing substance contained in said additive liquid solution is diffused into said travelling air bubbles so that when the air bubbles reach the upper surface of said additive liquid solution held in said container means the gaseous phase is a mixture of air and aromatizing or deodorizing substance and the mixture of air and aromatizing or deodorizing substance then travels through said second conduit means into the atmosphere surrounding said flush tank.

4,212,090

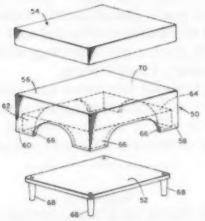
OTTOMAN CONVERTIBLE

Louis Ehrlich, 22 Chestnut Pl., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 944,075, Sep. 20, 1978. This application Feb. 23, 1979, Ser. No. 14,369

Int. Cl.[2] A47C *13/00*

U.S. Cl. 5—14 **7 Claims**



1. An ottoman convertible to a bed comprising:

a base having a horizontal platform substantially equal in width and depth dimensions to the plan dimensions of the ottoman, said base also having legs for supporting the platform above the floor,

a lower cushion having a rigid frame and with legs secured to the frame, the total height of the lower cushion from the bottom of its legs to the top surface of the cushion exceeding the height of the base from the bottom of its legs to the top surface of the platform,

said platform provided with openings placed within the platform and removed from the platform edge through

which openings the legs of the lower cushion extend when the lower cushion is placed on the platform,

and an upper cushion having plan dimensions substantially equal to the plan dimensions of the lower cushion and designed to lie either directly on the platform or on top of the lower cushion when the lower cushion is on the platform,

the plan dimensions of the base being slightly smaller than the plan dimensions of the lower and upper cushions so that when either the lower cushion or upper cushion is placed on the base, it overlays the base to hide it,

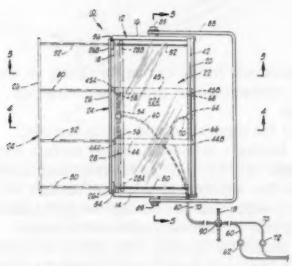
the combined height of the base with its legs and the upper cushion being equal to the height of the lower cushion from its upper surface to the bottom of its legs whereby when the upper cushion is placed directly on the platform and the lower cushion is placed immediately adjacent and in alignment with the base and upper cushion, the three elements define a reclining surface having substantially twice the plan area of ottoman when the base, lower cushion and upper cushion are stacked on top of one another.

4,212,091

WIPER APPARATUS FOR A VIEWING SURFACE

Marcus C. Jones, 7009 Stonycreek Dr., Oklahoma City, Okla. 73132

Filed Feb. 5, 1979, Ser. No. 9,122
Int. Cl.[2] B60S *1/12, 1/44*
U.S. Cl. 15—250 B **21 Claims**



1. In combination with a viewing device having a viewing surface, the viewing device projecting laterally from a vehicle, an improved wiping apparatus comprising:

a mounting frame supporting the viewing device, the mounting frame and viewing device defining an enclosed interior cavity;

a wiper frame slidingly supported on the mounting frame above the viewing surface;

a wiper blade supported by the wiper frame and disposed to wipingly engage the viewing surface as the wiper frame is moved;

a first fluid cylinder for motivating bidirectional linear movement of the wiper frame, the first fluid cylinder being supported by the mounting frame and disposed within the interior cavity in a position parallel to the line of travel of the wiper blade, the first fluid cylinder having a first end and a second end;

a first piston disposed in the interior of the first fluid cylinder;

a first piston rod extending through, and closely received in, an aperture in the mounting frame, the first piston rod having one end connected to the first piston and the other end connected to the wiper frame;

first fluid communication means for establishing fluid communication to the first end of the first cylinder and comprising a first conduit;

second fluid communication means for establishing fluid communication to the second end of the first cylinder and comprising a second conduit; and

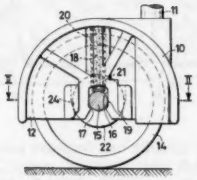
control means interposed in the first and second conduits for actuating fluid flow in a selectable one of the first and second conduits when the first and second conduits are connected to a source of pressurized fluid.

4,212,092

CASTOR-WHEEL FOR ARMCHAIRS AND THE LIKE

Franco Ferrari, Lecco, Italy, assignor to Agostino Ferrari & C. S.n.C, Lecco, Italy

Filed Sep. 14, 1978, Ser. No. 942,372
Claims priority, application Italy, Nov. 3, 1977, 29322 A/77
Int. Cl.[2] B60B *33/00*
U.S. Cl. 16—35 R **6 Claims**



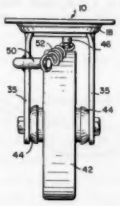
1. A castor wheel assembly, for chairs, said castor wheel assembly being characterized in that it comprises a body having a horizontally extending slot, said slot having a vertical extent, a pivot axle mounted within said slot for limited vertical movement, a pair of wheel-halves rotatably mounted on opposite end portions of said pivot axle, said body having at opposite ends of said slot seats each having tapered confronting walls, each of said wheel-halves having a hub positioned generally within one of said seats, a spring normally urging said pivot axle so as to bring said hubs of the wheel-halves into wedging frictional contact with said tapered seat walls, said spring being of a strength to support its proportional share of the weight of an associated chair and being compressible under the load of a person in the chair to release said hub from said seats, said body having means mounting said body for rotation about a vertical axis which is offset from the axis of said pivot axle.

4,212,093

SELF-ALIGNING MECHANISM FOR SWIVEL CASTER

Paul W. Lombard, Woburn, Mass., assignor to Market Forge, Division of Beatrice Foods Co., Everett, Mass.

Filed Feb. 5, 1979, Ser. No. 9,403
Int. Cl.[2] B60B *33/00*
U.S. Cl. 16—35 D **11 Claims**



1. A self-aligning mechanism for a swivel caster comprising a support, a carriage mounted on the support for rotation about a predetermined axis, a wheel mounted to the carriage about an axis at right angles to said predetermined axis, yieldable means connected at one end to the carriage, and means rotatably connecting the other end of said yieldable means to the car-

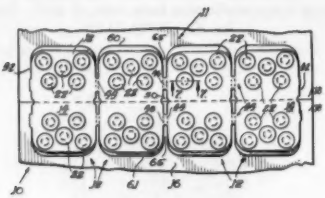
riage support at a point central of the rotation of that end of the yieldable means which is connected to the carriage and radially displaced from the axis of rotation of the carriage.

4,212,094

BELT FASTENERS

Winston C. Pray, Lombard, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Filed Oct. 5, 1978, Ser. No. 948,970
Int. Cl.[2] F16G *3/02*
U.S. Cl. 24—31 B **5 Claims**



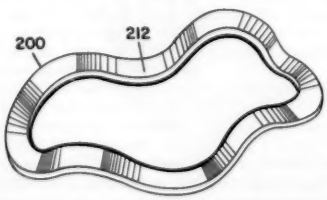
1. A plurality of metallic belt fasteners joined together in a strip for joining belt ends together, comprising: a first belt fastener having at least one plate body for laying against one side of the belt, a plurality of openings in said plate body for receiving fastener means to penetrate the belt and to secure the plate body at a definite fixed location on the belt end, a second adjacent belt fastener having a plate body for laying against the same side of the belt, a plurality of openings in said second plate body for receiving fastener means to secure the second plate body to the belt at a fixed location closely adjacent the first plate body, a metallic bridge means joining said first and second plate bodies and being integrally attached to each of them, said bridge means joining said fastener plates and holding said plates in a predetermined relationship to each other with said openings in said adjacent plates being located at fixed and predetermined locations to each other and to an end of the belt, frangible means connecting said bridge means to said first and second fastener plates for breaking away said bridge means, said bridge means spacing said fastener plates from each other until being broken away and leaving a substantial space between adjacent edges of said fastener plates, said frangible means being adapted to allow chiseling of said bridge means after securing said fastener plates or said bridge means breaking away along one side at said first plate body with the flexing of the belt and then along the other side at said second plate body under flexing of the belt.

4,212,095

BEARING COMPONENTS AND METHODS OF MAKING SAME

Henry A. Warchol, 2 Sackville Ave., Westfield, Mass. 01085

Filed Feb. 13, 1978, Ser. No. 876,899
Int. Cl.[2] B21K *1/05*
U.S. Cl. 29—148.4 C **5 Claims**



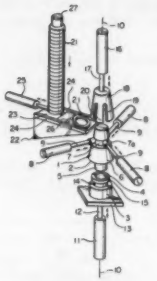
1. A method of transforming a flat narrow strip of stock into one half of a bearing retainer cage of cyclodial undulated configuration comprising the steps of: forming a closed ring from a narrow strip of stock with the confronting edges fused together, transforming the ring into a frustroconical configuration, transforming the frustroconical configuration into a flat planar configuration, and transforming the flat planar configuration into equispaced ball retaining undulations of cyclodial configuration.

4,212,096

AUTOMATIC RESILIENT RING FITTING DEVICE

Tatsuoki Saito, and Eiji Nagashima, both of Kofu, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Aug. 21, 1978, Ser. No. 935,315
Claims priority, application Japan, Aug. 20, 1977, 52/100031
Int. Cl.[2] B23P *19/02*
U.S. Cl. 29—235 **7 Claims**



1. An automatic fitting device for fitting an elastic annular ring on a circumferential groove on an article, said device comprising:

a support for supporting said article thereon;

a guide having a conically shaped surface with the large diameter end of said guide extending downward and shaped for abutting at one end surface of said article which is supported on said support, said guide adapted for having said annular ring mounted thereon;

moving means for moving said elastic annular ring down along said conical surface and causing the diameter of said ring to enlarge, said moving means further pushing said ring onto said article and causing said ring to be fitted in said circumferential groove of said article; and

clamping means for releasably clamping the outer surface of said guide and supporting said guide when said guide is not abutting at said article.

4,212,097

METHOD AND APPARATUS FOR MANUFACTURING OPTICAL CABLE ELEMENTS

Antonio Portinari, Sesto San Giovanni, and Sergio Longoni, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

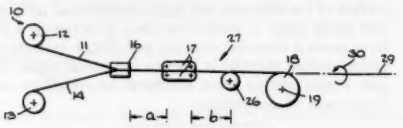
Filed Apr. 20, 1978, Ser. No. 898,081
Claims priority, application Italy, May 4, 1977, 23147 A/77
Int. Cl.[2] B23P *11/02*; B21B *15/00*; B21D *39/03*; B23P *23/04*
U.S. Cl. 29—450 **18 Claims**

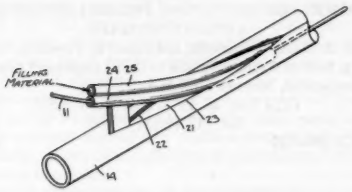
1. A method for producing a unitary element particularly adapted for use in telecommunication cables, said element comprising a tube of an elastic material having a longitudinally extending slit therein which extends from the outer periphery of the tube to the interior thereof, said tube loosely enclosing one or more optical fibers, said method comprising:

uniformly advancing a tube of said material which has been previously extruded and stabilized toward a traction zone, said tube having an inner diameter larger than the diameter of a circle circumscribing said one or more fibers;

applying a traction force to said tube in said zone to place the portion of the tube upstream of said zone under tension;
upstream of said zone, cutting said tube longitudinally, as the tube is advanced, through one thickness of the tube wall to provide a pair of cut edges extending longitudinally of the tube;
separating said edges upstream of said zone to provide a gap therebetween;
uniformly advancing said fiber or fibers while inserting them within said tube through said gap;
permitting said edges to come together, after the fiber or fibers have been inserted, by reason of the elasticity of the tube material; and
collecting the tube with the fiber or fibers loosely enclosed therein, at a point downstream of said traction zone while causing said tube to follow a linear path from said traction zone to said point.

6. Apparatus for producing a unitary element particularly adapted for use in telecommunication cables, said element





comprising a tube of an elastic material having a longitudinally extending slit therein which extends from the outer periphery of the tube to the interior thereof, said tube loosely enclosing one or more optical fibers, said apparatus comprising:
cutting means for cutting said tube longitudinally and from the exterior to the interior thereof to form a pair of cut edges;
first feeding means for feeding said tube to said cutting means;
traction means following said cutting means for pulling said tube away from said cutting means;
spreading means intermediate said traction means and said cutting means for spreading said edges apart to form a gap therebetween;
second feeding means for feeding said one or more fibers toward and into the interior of said tube through said gap; and
collecting means following said traction means for collecting said tube with said fiber or fibers therein after they leave said traction means.

4,212,098

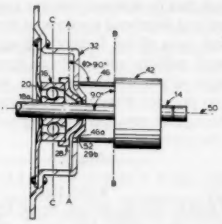
METHOD AND APPARATUS FOR ALIGNING A BEARING

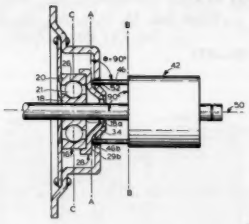
William T. Sand, Curtice, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Dec. 5, 1977, Ser. No. 857,538
Int. Cl.[2] **B23P** *3/00, 19/04*
U.S. Cl. 29—460 **8 Claims**

1. A mounting apparatus for a bearing containing an outer race and an inner race, the inner race adapted to receive and support a shaft, in combination with apparatus for aligning said bearing, comprising:
a first plate;
a second plate;
a cup adapted to swivel on a portion of the first plate, said cup receiving the outer race of the bearing to support the bearing on the first plate;
first means disposed on the second plate for pressing the outer race into the cup and simultaneously pressing the cup into said first plate portion, whereby the first plate is adapted to swivel with respect to the bearing and the shaft axis; and
second means for shifting the outer race with respect to the inner race by shifting said cup in said first plate until the outer race is parallel to the inner race.

5. A method for mounting and aligning a bearing mounted on a plate, the plate being removably fastened to a frame, the bearing consisting of an inner race adapted to receive and support the shaft and an outer race concentric therewith, comprising the steps:





placing the bearing in a cup;
placing the cup on the plate;
resiliently pressing the bearing in the cup and the cup simultaneously on the plate;
passing the shaft through the inner race, the cup, and the plate;
fastening the plate on the frame; and aligning the outer race by shifting the cup on the plate.

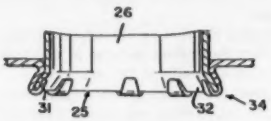
8. An alignment tool to be used with bearings having inner and outer races wherein the inner race supports a shaft, and the outer race is received in a cup, comprising:
a collar having a bore closely receiving a shaft that is slid down the shaft which includes a plurality of at least three circumferentially spaced parallel legs protruding axially therefrom, the ends of which define a plane perpendicular to the shaft axis, and all of said ends contact the cup when the inner race and the outer race are parallel with respect to the center line of the shaft.

4,212,099

METHOD OF MAKING TUBE-TO-PLATE CONNECTION

Ronald S. Williams, and Robert S. Hill, both of Columbus, Ind., assignors to Arvin Industries, Columbus, Ind.

Division of Ser. No. 908,392, May 22, 1978. This application Dec. 18, 1978, Ser. No. 970,551
Int. Cl.[2] B23P 11/02
U.S. Cl. 29—507 4 Claims



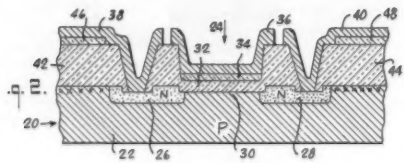
1. The method of joining a tube to a plate comprising the steps of forming an aperture in the plate where the tube is to be joined, forming a flange around the perimeter of the aperture, forming a plurality of upstanding fingers on the flange remote from the plate, forming each finger to include a generally radially inwardly extending portion and a radially inner, axially extending distal end portion, inserting the tube into the aperture such that its side wall lies in a space provided between the proximal and distal end portions of the fingers, and deforming the distal ends of the fingers and adjacent regions of the tube side wall radially outwardly to form indentations in the tube side wall within which the finger distal end portions are positioned to prevent rotation of the tube in the plate to capture the tube against rotation and longitudinal movement with respect to the plate.

4,212,100

STABLE N-CHANNEL MOS STRUCTURE

John Paivinen, Bloomfield Hills, Mich.; Walter D. Eisenhower, Jr., Audobon, Pa., and Ernest R. Helfrich, Richardson, Tex., assignors to MOS Technology, Inc., Norristown, Pa.

Filed Sep. 23, 1977, Ser. No. 835,985
Int. Cl.[2] B01J 17/00
U.S. Cl. 29—571 2 Claims



1. A method of making an MOS integrated circuit having improved temperature stability comprising the steps of:

providing a P-type silicon substrate and forming a first uniform thin oxide layer along a laterally extending top major surface of the substrate;

ion-implanting a P-type dopant through the first oxide layer to form immediately thereunder a uniform layer of P^+-type semiconductor material extending laterally along said major surface of the substrate;

forming a second uniform thick oxide layer over the major surface of the substrate and removing selected laterally spaced-apart portions of the first and second oxide layers to leave a pattern of pairs of active areas of the substrate spaced laterally by unremoved fields of the first and second oxide layers and underlying fields of P^+-type material, the active areas of each pair being laterally spaced apart by a strip of unremoved first and second oxide and an underlying strip of P^+-type layer;

forming a source region at one of the active areas of each pair of active areas and a drain region at the other active area of the pair and forming a third thick oxide layer extending laterally over the major surface of the substrate;

removing at least a portion of the strip of first, second and third oxide layers over said strip of P^+-type layer and removing at least a portion of said strip of P^+-type layer to leave a pattern of unimplanted gate regions of the substrate, each gate region being laterally flanked by a source region and a drain region, and removing the third oxide layer over a portion of each source and drain region;

forming a fourth, thin oxide layer over each source region, drain region and gate region;

forming a layer of polysilicon extending laterally over the major surface of the substrate;

removing selected portions of the polysilicon layer to leave over each gate region a polysilicon layer portion extending laterally at least to the lateral extent of said gate region and removing the fourth, thin oxide layer over at least a portion of each of at least some of said source and drain regions; and

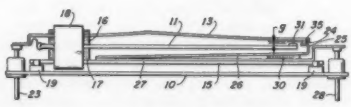
forming a metal layer laterally disposed over the major surface of the substrate and removing selected portions of said metal layer to leave over each gate region a metal layer portion disposed over the polysilicon layer portion and extending laterally at least to the lateral extent of the gate region and to leave electrical interconnects to selected ones of said regions.

4,212,101

METHOD FOR ADJUSTING PIEZOELECTRIC RELAY OPERATING GAPS

Ivan E. Brohard, Westerville, and James R. Freeburg, Reynoldsburg, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 973,537
Int. Cl.[2] H01H 11/00
U.S. Cl. 29—622 3 Claims



1. In the fabrication of a piezoelectric relay comprising a substrate,

a bracket supporting a fixed contact mounted on said substrate by a solder layer,

a flexible spring mounted on said substrate having a moveable contact affixed at an end thereof normally bearing on said fixed contact by the force of said spring, and

an actuator beam mounted on said substrate adapted to engage said spring for raising said moveable contact from said fixed contact responsive to the application of an operate voltage thereto; a method for adjusting the operating gap between said spring and said actuator beam comprising the steps of

adjusting the thickness of said solder layer so that an initial gap is presented between said actuator beam and said spring,

applying an adjust voltage to said beam of a magnitude sufficient to cause a free deflection toward said spring exerting a nominal force substantially equal to said spring force,

applying heat to said solder layer to its melting point to permit said spring to urge said bracket towards said substrate and to permit said spring to contact said beam,

removing said heat when the combined reactive forces of said fixed contact and said beam equal said spring force, and

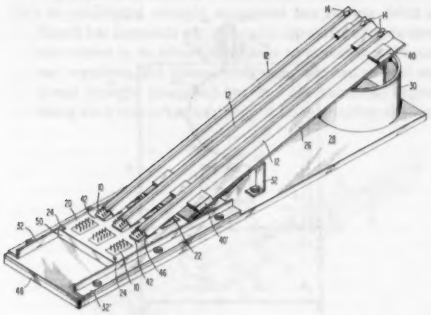
removing said adjust voltage to leave a final gap between said spring and said beam.

4,212,102

IC SOCKET INSERTION TOOL

John H. Drinkard, Jr., Exton, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 22, 1978, Ser. No. 963,116
Int. Cl.[2] H05K *3/30*
U.S. Cl. 29—741 **13 Claims**



1. An apparatus for use in mounting leaded electronic parts on a printed circuit board, said printed circuit board drilled with a plurality of holes to receive the mounting leads of said leaded electronic parts, said holes forming a plurality of patterns, each of said patterns corresponding to the pattern of the mounting leads of one of said leaded electronic parts, said printed circuit board further drilled with a plurality of alignment holes, said apparatus comprising:

template means having a plurality of recesses, said template means for receiving said leaded electronic parts, each of said recesses located at a position corresponding to the location of one of said plurality of patterns on said printed circuit board; and

means for positioning one of said leaded electronic parts in each of said recesses, whereby one of said leaded electronic parts is seated in each of said recesses, said positioning means including

a horizontal support,

means for dispensing said leaded electronic parts, said dispensing means including a plurality of dispensing tubes and means for holding said plurality of dispensing tubes in a position to dispense one of said leaded electronic parts into each of a subset of said plurality of said recesses,

means connected to said horizontal support and said dispensing means, including means for supporting said dispensing means above and at an acute angle with said horizontal support, said support means further including means for vibrating said dispensing means, and

alignment means connected to said horizontal support for aligning said template means in position to receive said leaded electronic parts, said alignment means including two angle iron shaped guide bars, said template means being slidable between the opposed inner surfaces of said guide bars.

4,212,103

RAZOR

April Schuman-Hoole, Box 791, Tenafly, N.J. 07670

Filed Oct. 27, 1978, Ser. No. 955,408
Int. Cl.[2] B26B *21/22*
U.S. Cl. 30—32 **4 Claims**

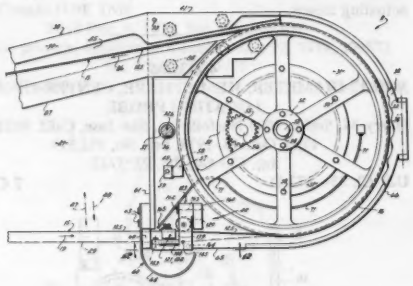
1. A handle construction mounting a razor head having at least one razor blade mounted within the razor head with a cutting edge projected from one side of the razor head for shaving, said handle construction including a handle adapted to be manually gripped to support the razor head during shaving, said handle including a head carrying section mounting the razor head thereon and a gripping section integral with that end of said head carrying section opposite the razor head and angled with respect to said head carrying section, said head carrying section including a pair of spaced apart legs extending from the juncture between said head carrying and gripping sections to opposite ends of the razor head to define an opening therebetween immediately ahead of the razor head, said head carrying section further including a transparent member extending between said mounting legs of said head carrying section of said handle along that end of said opening opposite the cutting edge of the razor blade to close said opening so that material removed during shaving can accumulate within said opening under said transparent member, yet the user can view the skin area being shaved immediately ahead of the razor head through said transparent member.

4,212,104

BLADE GUIDE ROLLER ASSEMBLY FOR A BAND SAW

Mark W. Wikoff, Cincinnati, Ohio, assignor to The Walter J. Best Company and The Wolf Machine Company, both of Cincinnati, Ohio

Division of Ser. No. 881,734, Feb. 27, 1978, Pat. No. 4,160,320, which is a continuation-in-part of Ser. No. 785,037, Apr. 6, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,855
Int. Cl.[2] B27B *13/08, 13/02*
U.S. Cl. 30—380 **8 Claims**



1. An alignment roller assembly for an endless saw blade of a band saw, one idler roller assembly being located in the saw's idler wheel housing, and another idler roller assembly being located in the saw's driven wheel housing, said alignment roller assembly comprising

an edge roller positioned to bear against the non-toothed edge of said endless saw blade,

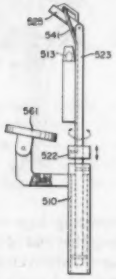
two side face rollers, said side face rollers being disposed to bear against opposite sides of said endless saw blade, the rotational axes of said side face rollers being on a line angulated relative to the plane of said edge roller, and

a swing arm on which is mounted one of said side face rollers, said swing arm permitting said one side face roller to be adjusted relative to the other side face roller.

4,212,105
INSPECTION DEVICE FOR CAVITIES

Hiroshi Hukuba, No. 914-1, Nazukari, Nagareyama-shi, Chiba-ken, Japan

Filed Nov. 4, 1977, Ser. No. 848,616
Claims priority, application Japan, Nov. 10, 1976, 51-135644; Jun. 6, 1977, 52-66511; Jul. 12, 1977, 52-83168; Sep. 21, 1977, 52-113829
Int. Cl.[2] A61C 3/00
U.S. Cl. 433—30 36 Claims

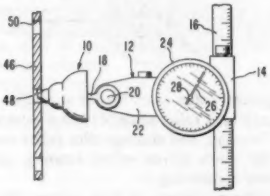


1. An inspection device, comprising: an elongated body adapted to be grasped by the human hand; an inspection mirror; support structure mounting said inspection mirror on said body, said support structure including a rotatable first support which is rotatable about a first axis of rotation relative to said body and which supports said inspection mirror for arcuate movement as a unit about said first axis of rotation, said first axis of rotation extending lengthwise of said elongated body, said support structure also including a second support which supports said inspection mirror for tilting movement relative to said body about a second axis transverse to said first axis of rotation for changing the inclination of said inspection mirror relative to said body; and actuating means engaged with said inspection mirror for tilting said inspection mirror in response to relative movement between said support structure and said actuating means.

4,212,106
MULTI-DIAMETER, HEMISPHERE, CENTER-OF-HOLE LOCATING PROBE

Harry M. Smith, 1093 Norfolk Dr., San Jose, Calif. 95129

Filed Oct. 18, 1978, Ser. No. 952,519
Int. Cl.[2] G01B 3/22, 5/12
U.S. Cl. 33—172 D 7 Claims

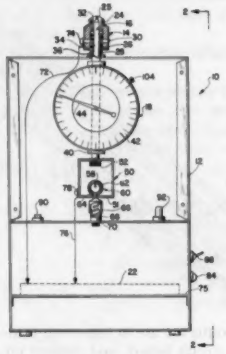


1. A contact member for use with a device for measuring the space between a number of holes in a workpiece comprising: an elongated body having a control axis and a number of sections provided with respective, generally spherical outer surface portions of different diameters, each section being generally hemispherical in cross-section; and means on the body at one end thereof and centrally located relative to said central axis for connecting the body to a measuring device.

4,212,107
LENS MEASURING METHOD AND APPARATUS

Orazio Mezzasalma, Edificio Parque Florida 45N Avenida Avila, La Florida, Caracas-105, Venezuela

Filed Jun. 9, 1978, Ser. No. 914,090
Int. Cl.[2] G01B 5/08, 5/20
U.S. Cl. 33—174 A 15 Claims



1. A lens measuring apparatus for obtaining a desired measurement of an electrically conductive lens having first and second opposed surfaces, said lens measuring apparatus comprising:

a first electrical conducting contact for contacting a first portion of the first surface of said lens, said first electrical contact comprising a support collar having a metallic support contact surface for supporting said lens thereon with said first surface of said lens in electrical contact with said support contact surface;

a second electrical conducting contact mounted for movement with respect to said first electrical conducting contact for selectively contacting a second portion of said first surface of said lens, the relative positioning of said first and second electrical conducting contacts being indicative of the desired measurement of the lens, said second electrical conducting contact comprising a rod mounted for movement along a line substantially normal to said support contact surface and having a metallic tip for contacting said first surface of said lens whereby the position of said tip relative to said support contact surface of said support collar is indicative of said desired measurement;

potential means for applying a potential across said first and second contacts to cause current to be conducted between said first and second contacts through said lens when both of said first and second electrical conducting contacts contact said first surface of said lens;

moving means for moving said second electrical conducting contact relative to said first electrical conducting contact to change the relative positioning of said first and second contacts; and

sensing means for sensing said current conducted between said first and second contacts through said lens.

4,212,108
LAYOUT TOOL FOR FRAMING STUDS

Hubert H. Jackson, 2512 21st St., Santa Monica, Calif. 90405

Filed Jan. 8, 1979, Ser. No. 1,675
Int. Cl.[3] G01B 3/00
U.S. Cl. 33—174 G 5 Claims

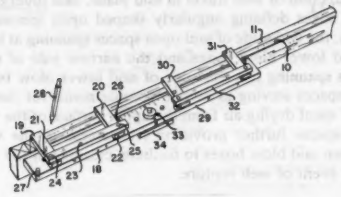
1. A layout tool for framing studs including, in combination:

(a) a straight elongated bar having a flat narrow top surface;

(b) first and second flat narrow bar segments pivoted to the top surface of said elongated bar adjacent to opposite ends

of said flat narrow top surface for swinging movement in their own planes towards each other to closed positions in which the segments overlie and are parallel to said elongated bar, and to open positions away from each other in which the segments extend at right angles to said elongated bar, the distance between said segments when in open positions corresponding to the desired distance between framing studs to be erected;

(c) an additional straight elongated bar having third and fourth bar segments pivoted to its top surface for swinging movement in an identical manner to said first and second bar segments, the distance between one end of said additional straight elongated bar and the third bar segment being such that when said one end is in abutting alignment



with the end of said first mentioned straight elongated bar following said second segment, the distance between said second segment and third segments when in open positions corresponds to said desired distance; and

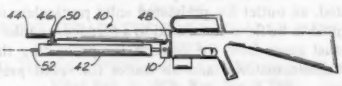
(d) connecting means for securing the straight elongated bars in end-to-end alignment whereby, said tool can be positioned along base and overhead boards for the framing studs with the open bar segments overlying the boards and four stud positions marked on the boards with one application of said tool by utilizing said segments as a pencil guide, and whereby said segments can be folded to their closed positions and said straight elongated bar disconnected from said additional straight elongated bar for easy packing and transportation of said tool.

4,212,109

WINDAGE AND ELEVATION MECHANISM FOR LASER AIMED WEAPONS

Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77070

Filed Oct. 30, 1978, Ser. No. 955,890
Int. Cl.² F41G 1/34
U.S. Cl. 33—241 **17 Claims**



17. A windage and elevation mechanism for a weapon having an elongate barrel with a laser aiming device attached thereto, comprising:

a support member;

a rod substantially rigidly attached to said laser aiming device and movably attached to said support member in axial alignment with said barrel of said weapon;

means for supporting said rod within said support member; and

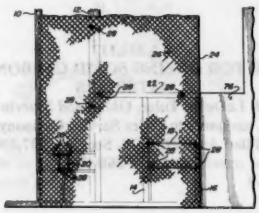
adjusting means mounted to said support member and operatively associated with said means for supporting said rod, for calibrating said laser aiming device in a vertical and horizontal direction.

4,212,110

APPARATUS FOR MARKING BUILDING PANELS

Duncan E. Hill, Jr., Paramus, N.J., assignor to Design Maintenance Corporation, Palisades Park, N.J.

Filed Jul. 3, 1978, Ser. No. 921,215
Int. Cl.² G01B 3/14
U.S. Cl. 33—174 G **7 Claims**



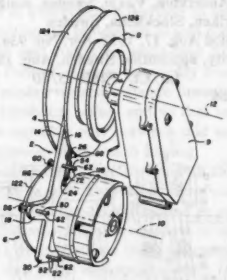
1. An apparatus for indicating on the surface of a panel the location of a portion of the panel to be cut, which apparatus comprises a planar body conforming to the shape of the panel and adapted to be superimposed on and register with the panel, the body also being adapted to be superimposed on a work area, the body having means defining a matrix of openings therethrough, separate means for marking the surface of the panel, the means for marking being adapted for insertion through, registration in and retention by one of the means defining an opening through the body; whereby when the planar body is superimposed on the work area, marking means are registered in the means defining openings through the body conforming to a position in the work area requiring a "cut" in a panel, and the planar body with registered marking means is then superimposed on and registered with a panel, the registered marking means operate to indicate on the surface of the panel the portion thereof to be cut.

4,212,111

SNOWMOBILE CLUTCH ADJUSTING TOOL

Stanley T. Saari, Box 3616, R.R. #2, Clearwater, British Columbia, Canada (V0E 1N0)

Filed Dec. 4, 1978, Ser. No. 965,931
Claims priority, application Canada, Mar. 22, 1978, 299572
Int. Cl.² G01B 5/25
U.S. Cl. 33—181 R **11 Claims**



1. A tool for aligning sheaves and the like rotatable about spaced-apart parallel axes of rotation, the tool comprising:

an elongate member for extending between two sheaves generally perpendicular to the axes of rotation;

first contacting means generally near a first end of the elongate member for contacting a first said sheave; and

second contacting means generally near a second end of the elongate member for contacting a second said sheave

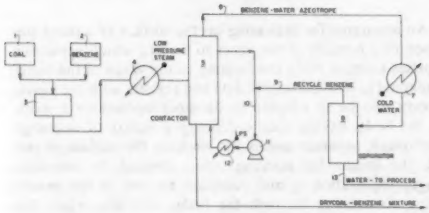
comprising three gauge members spaced apart as the vertices of a triangle and extending from one side of the elongate member, each gauge member comprising indicating means for indicating a distance between the elongate member and the second sheave, so that, when the first contacting means contacts the first sheave, and the second contacting means contacts the second sheave and each indicating means indicates said distance, the sheaves are aligned.

4,212,112

METHOD FOR DRYING SOLID CARBONACEOUS MATERIALS

Christopher J. LaDelfa, Tulsa, Okla., and Marvin Greene, Somerset, N.J., assignors to Cities Service Company, Tulsa, Okla.

Filed Aug. 29, 1978, Ser. No. 937,890
Int. Cl.[2] F26B *3/00*
U.S. Cl. 34—9 **7 Claims**



1. A process for reducing the moisture content of solid, moist carbonaceous materials, using a closed contactor, comprising

(a) grinding the solid material to a size range of 20–400 mesh,

(b) mixing the solid, moist carbonaceous material with a moisture-removing liquid selected from the group consisting of benzene, toluene, and xylenes, these materials being capable of forming an azeotrope with the moisture, with the ratio of solid material to moisture-removing liquid in the mixture varying from about 2/1 to about 1/20,

(c) heating the mixture, and

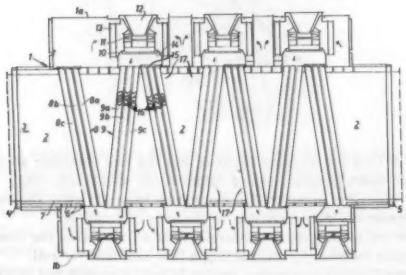
(d) separating the azeotrope from the mixture, thus reducing the moisture content of the solid portion of the mixture.

4,212,113

APPARATUS FOR DRYING AN AIR-BORNE WEB

Karl-Hugo S. Andersson, Vaxjo, Sweden, assignor to AB Svenska Flaktabriken, Stockholm, Sweden

Filed Aug. 17, 1978, Ser. No. 934,401
Claims priority, application Sweden, Aug. 18, 1977, 7709332
Int. Cl.[2] F26B *13/20*
U.S. Cl. 34—156 **1 Claim**



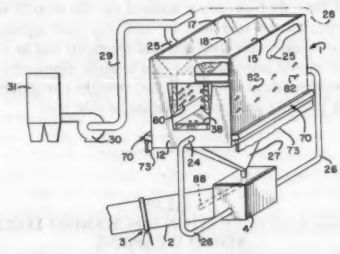
1. Apparatus for drying web material with air comprising a first series of transversely-oriented and uniformly longitudinally spaced-apart supporting blow boxes disposed in a plane underlying the undersurface of the web in its plane of travel through the apparatus to blow drying air against the undersurface of the web to support the web in closely-spaced relation to the plane of said blow boxes, a second series of blow boxes disposed on the upper side of the web in a plane closely adjacent the plane of travel of the web through the apparatus, said upper blow boxes being disposed above the upper surface of the web in pairs, said upper blow boxes being of uniform width in their plane, a fan chamber for each of the upper blow boxes, said fan chambers being disposed at spaced locations along the length of at least one side of the dryer apparatus, said pairs of upper blow boxes extending diagonally from each fan chamber at a divergent angle respectively forwardly and rearwardly of the direction of web travel in said plane, said divergent upper blow boxes defining angularly shaped open spaces therebetween, the wide side of said open spaces spanning at least three of said lower blow boxes and the narrow side of said open spaces spanning less than one of said lower blow boxes, said open spaces serving as suction compartments for the exhausting of spent drying air from the upper surface of the web, said open spaces further providing free access to the web path between said blow boxes to facilitate cleaning of the web path in the event of web rupture.

4,212,114

APPARATUS FOR PREHEATING SOLID PARTICULATE MATERIAL

William C. Wentzel, Allentown, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Feb. 22, 1978, Ser. No. 879,839
Int. Cl.[2] F26B *17/12*
U.S. Cl. 34—167 **8 Claims**



1. Apparatus for preheating solid particulate material which is to be heat processed in a furnace comprising;

a vessel having sidewalls, end walls and a floor and having at least one inlet for solid particulate material to be preheated, an outlet for preheated solid particulate material adapted to be flow connected to a furnace, an inlet for hot exhaust gases from the furnace for preheating the solid particulate material and an outlet for spent preheating gases;

means defining a gas-solids contact zone within said vessel intermediate the inlet and the outlet for solid particulate material and intermediate the inlet and the outlet for gas whereby the solid particulate material which moves from its inlet to its outlet and the gas which moves from its inlet to its outlet pass through the gas-solids contact zone;

a plurality of conduits for conducting solid particulate material from the inlet for solid particulate material to the gas-solids contact zone;

a plurality of valve means, each operatively associated with one of said conduit means for controlling the flow of solid particulate material through its associated conduit for controlling the depth of material in said gas-solids contact zone;

means for moving solid particulate material from said gas-solids contact zone to said outlet for preheated solid particulate material;

a U-shaped wall means having legs and a generally horizontal member connecting said legs mounted in said vessel and spaced from said sidewalls and said floor; and

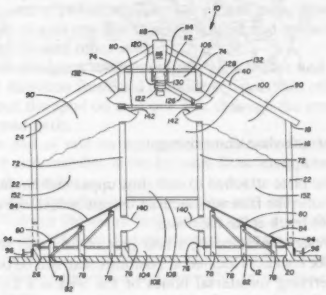
said gas-solids contact zone is defined by said sidewalls, end walls, floor and said U-shaped wall means.

4,212,115

SEED CORN DRYER APPARATUS

Howard Adler, Sharpsville, Ind., assignor to Adler's Seeds, Inc., Sharpsville, Ind.

Filed Nov. 3, 1978, Ser. No. 957,570
Int. Cl.[2] F26B *25/06*
U.S. Cl. 34—215 **12 Claims**



12. A dryer apparatus comprising: a foundation, an exterior shell on said foundation, said exterior shell including a pair of opposite upstanding side walls, a pair of interior walls upstanding from said foundation, said interior walls being spaced-apart from and generally parallel to said side walls, a plenum being located between said paired interior walls, said plenum including upper and lower plenums, a storage area being contained between said side and interior walls, and means for circulating air between the lower and upper plenums only through said storage area, said plenum further includes a grain distribution area positioned above said upper plenum, a closeable passageway being contained in each of said interior walls of said distribution area, said closeable passageways providing selective communication between said distribution area and storage area, and means, located in said distribution area, for receiving and distributing grain so as to maintain a uniform depth of grain in the storage area.

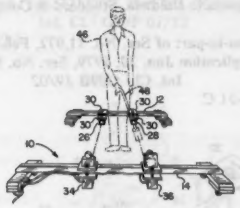
4,212,116

TRAINING APPARATUS FOR VISUALLY IMPAIRED PERSON

James D. Hajduch, 1703 Carolina Ave., Whiting, Ind. 46394

Filed Feb. 5, 1979, Ser. No. 9,740
Int. Cl.[2] G09B *21/00*
U.S. Cl. 35—29 R **10 Claims**

1. An apparatus to aid in instructing a visually impaired person comprising: a first and second exciter means, situated as set forth hereinafter, each of said exciter means capable of producing a light beam; a first and second receiver means, situated a distance away from said exciter means so that each of said first and second receiver means is capable of receiving said light beam produced by said first and second exciter means, respectively, said first and second exciter means being spaced apart a sufficient distance to allow said person to stand or walk on the floor therebetween, without interrupting the light beam from either of said exciter means to said corresponding receiver means; and a first and second sound means associated with said first and second receiver means respectively, each of said sound means acting to produce a distinctive sound in



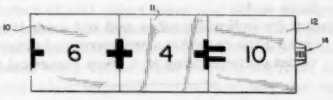
response to the interruption of said light beam to said corresponding receiver means.

4,212,117

SYSTEM OF INTERACTIVE BLOCKS

Blair F. Baldwin, and Deborah Stoddard, both of New York, N.Y., assignors to Baldwin, Stoddard & Company, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,072
Int. Cl.[2] G09B *19/02*
U.S. Cl. 35—31 C **13 Claims**



1. A system of interactive blocks for teaching arithmetic, comprising:

a plurality of addend blocks each having:

first and second spaced parallel exterior surfaces and a hole extending through said block between said surfaces;

an elongated rod mounted within said hole for linear movement in a direction transverse to said surfaces;

means for limiting the movement of said rod so that when one end of said rod is adjacent said first surface the other end thereof extends outwardly from said second surface a predetermined distance linearly proportional to a first numerical value, and so that said one end of said rod is movable only between said surfaces;

a plurality of answer blocks each having:

a pair of spaced exterior surfaces and an elongated recess communicating with a selected one of said surfaces;

a displaceable flag member disposed in said recess and mounted for movement in response to entry of one of said rods a given distance into said recess linearly proportional to a given numerical value;

visible means for indicating the position of said flag member;

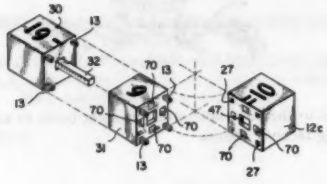
means for preventing said one rod from extending into said recess a distance greater that said given distance; and

indexing means on said first, second and selected surfaces of said addend and answer blocks respectively for maintaining adjacent ones of said surfaces with the holes and recesses thereof in mutual alignment.

4,212,118
SYSTEM OF INTERACTIVE BLOCKS

Blair F. Baldwin, and Deborah Stoddard, both of New York, N.Y., assignors to Baldwin, Stoddard & Company, New York, N.Y.

Continuation-in-part of Ser. No. 11,072, Feb. 12, 1979. This application Jun. 20, 1979, Ser. No. 50,457
Int. Cl.[2] G09B *19/02*
U.S. Cl. 35—31 C 20 Claims



7. A system of interactive blocks for teaching arithmetic, comprising

a plurality of minuend blocks each having an elongated rod extending from a given surface therof a first predetermined distance linearly proportional to a first numerical value;

a plurality of subtrahend blocks each having parallel first and second spaced exterior surfaces and a hole extending through said subtrahend block between said surfaces, the width of said subtrahend block between said surfaces being linearly proportional to a second numerical value;

a plurality of answer blocks each having:

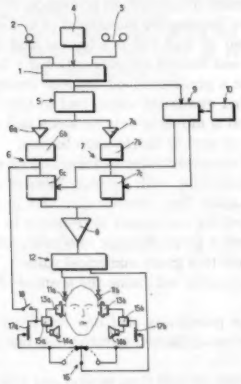
a pair of spaced exterior surfaces and an elongated recess communicating with a selected one of said pair of surfaces; and

means for indicating when said rod extends into said recess a distance within a predetermined range of distance values corresponding to a given numerical value.

4,212,119
AUDIO-VOCAL INTEGRATOR APPARATUS

Ange A. A. Tomatis, 68 Bd de Courcelles, 75017 Paris, France, assignor to Ange Alfred Auguste Tomatis, Paris, France

Filed Sep. 7, 1978, Ser. No. 940,208
Claims priority, application France, Jul. 19, 1978, 78 21407
Int. Cl.[3] G09B *19/04;* H04R *3/00*
U.S. Cl. 35—35 C 5 Claims



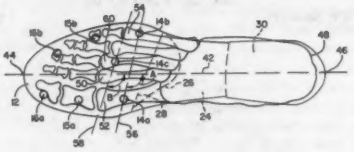
5. An audiovocal integrator apparatus, comprising

means for producing an acoustical signal; means for alerting the human ear by osseous conduction to the imminence of an acoustical signal; and means for transmitting the acoustical signal to the ear only after the ear has been alerted previously by osseous conduction.

4,212,120
TRACK SHOES HAVING STRAIGHT LAST AND IMPROVED SPIKE PLACEMENT

William J. Bowerman; Geoffrey L. Hollister; Stanley L. James, and Dennis E. Vixie, all of Eugene, Oreg., assignors to BRS, Inc., Beaverton, Oreg.

Filed Jun. 10, 1976, Ser. No. 694,720
Int. Cl.[2] A43B *5/00*
U.S. Cl. 36—129 6 Claims



1. A track shoe comprising:

a shoe upper;

a spike plate attached to said shoe upper and having a plurality of spike fasteners secured thereto which are adapted to hold track spike elements;

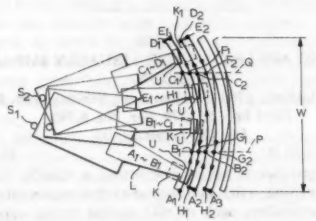
said fasteners including a rear pair of first and second rear spike fasteners located at positions that will be beneath the overlying metatarsal bones of the wearer's foot and behind the heads of said metatarsal bones, said rear spike fasteners being centered on a straight line which slants backward from the inside to the outside of said shoe; and

said fasteners including a third rear spike fastener located at a position that will be behind the head of the overlying metatarsal bone of the wearer's foot between said rear pair of spike fasteners and ahead of said line joining the centers of said rear pair of fasteners.

4,212,121
METHOD AND APPARATUS FOR DREDGING HAVING BOW-STERN MOVEMENT OF THE SUCTION MEANS

Masao Kato, Tokyo, and Kosuke Kishida, Ichikawa, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1978, Ser. No. 929,813
Int. Cl.[2] E02F *3/92*
U.S. Cl. 37—58 3 Claims



1. A method for dredging, comprising:

driving one spud of a pair of spuds provided on the respective sides of the stern of a dredger into the bottom of a body of water, said spud being on one side of the stern;

carrying out a cycle of steps comprised of:

swinging a ladder projecting from the bow of the dredger and the hull about the spud driven into the bottom while dredging through a suction port member that is

mounted at the free end of said ladder so as to be movable sternward and forward in the bow-stern direction of said hull as said ladder is swinging in the direction from one side through a first portion of the side to side path of movement of the suction port member with said suction port member disposed at the forwardmost position of its stroke:

then at the end of the first portion of said path, driving the spud on the other side into the bottom and retracting the spud on said one side;

further dredging while swinging said ladder and hull in the directon from said one side toward said other side about the spud on said other side through a second portion of said path while simultaneously gradually retracting said suction port member from the forwardmost position of the stroke thereof to the most sternward position;

at the end of the second portion of said path, driving the spud on said one side into the bottom and retracting the spud on said other side;

further dredging while swinging said ladder and hull in the direction from said one side towards said other side about the spud on said one side through the remainder of said path;

at the end of said swinging movement, moving said suction port member in the forward direction to the middle of the stroke;

thereafter dredging while swinging said ladder and said hull along the entire path towards said one side; and

at the end of said last-mentioned swinging movement, advancing said suction port member to the forwardmost position of its stroke; and thereafter repeating said cycle of steps.

4,212,122

FRAMING MEANS FOR FRAMING A PICTURE OR OTHER OBJECT

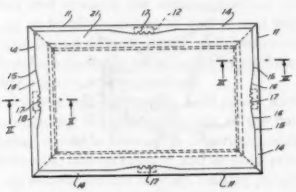
Paul Reim, Rathausgasse 5, D-7100 Heilbronn, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,742

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708144

Int. Cl.[2] G09F *1/12*

U.S. Cl. 40—152.1 **7 Claims**



1. Framing means for pictures and like objects, including a frame having a substantially Lshaped cross-section to define an enclosure having an inwardly projecting front flange, a picture holding set including a transparent front plate for supporting a picture, an elastically compressible insert, and a rear plate, comprising a plurality of arresting and holding projections integrally formed on the rear edge of said frame and extending inwardly at such a distance from each other and from said front flange as to receive and hold in a fixed position said picture holding set while said elastically compressible insert is in compressed state , said projections having a substantially V-shaped configuration with inwardly projecting apexes, and the inner side of the apex portion of each projection being provided with a recess adapted for receiving a matching part of a detachable prop and the edge side between said recess and the outer side of said apex portion having indentations for accommodating suspension elements.

4,212,123

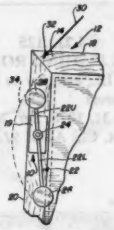
POSITIONING DEVICE

Martin I. Robin, 7616 Niles Center Rd., Skokie, Ill. 60077

Filed Nov. 22, 1978, Ser. No. 962,966

Int. Cl.[2] G09F *01/12*

U.S. Cl. 40—152.1 **8 Claims**



1. In combination, an object such as a picture frame, mirror or the like for suspending substantially in the vertical plane having a normally visible front surface and an opposed, normally hidden rear surface; indicator means for indicating whether said object is desirably suspended relative to the horizontal plane mounted on said object rear surface; a suspension point mounted on said object rear surface on which said indicator means is supportably mounted; said suspension point comprising a pivot enabline said indicator means to freely hang in a predetermined manner in the vertical plane regardless of the disposition of said object relative to the horizontal plane while said object is suspended substantially in the vertical plane; said indicator means being located relative to the periphery of said object so as to be hidden from view when viewing the front surface of said object when said object is suspended in substantially the vertical plane with said object at a predetermined angular disposition relative to the horizontal plane; said indicator means being visible when viewing the front surface of said object while suspended in substantially the vertical plane when said object is not in said predetermined angular disposition relative to the horizontal plane.

4,212,124

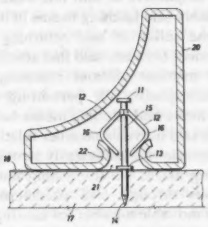
FRAME FOR WALL-MOUNTABLE DISPLAYS

Paul Gammill, P.O. Box 60327, Houston, Tex. 77205

Filed Jan. 4, 1979, Ser. No. 1,017

Int. Cl.[2] G09F *1/12*

U.S. Cl. 40—155 **17 Claims**



1. A frame section for covering at least a portion of the border of a wall-mounted display, comprising

a plurality of nails for attaching the border of the display to the wall, each of said nails including

a first head on the driven end of said nail,

a second head axially displaced from said first head for holding the display border against the wall,

resilient means located between said first and second heads and extending radially beyond said first head, and

an elongate frame strip having an opening in the back thereof for passing over said first head and snapping over said resilient means by resilient action.

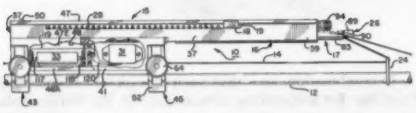
said resilient means contracting in size when said strip passes thereover and returning to its original size thereafter to hold said strip against the border of the display.

4,212,125

HOOK SETTING FISHING ROD ATTACHMENT

Chin K. Kim, Chicago, Ill., assignor to Bong Kon Kim, Melrose Park, Ill., a part interest

Filed Jul. 31, 1978, Ser. No. 929,887
Int. Cl.[2] A01K *91/06*
U.S. Cl. 43—16 **10 Claims**



1. In hook setting apparatus adapted to be connected fixedly to a fishing rod having a fishing line connected at one of its ends and at its other end to a fishhook, a hook setting attachment comprising:

a fixed elongated member adapted to be attached to the fishing rod;

a movable member mounted on said fixed member to move between an initial position and a set position;

line attaching means disposed on said movable member and adapted to be attached releasably to the fishing line;

means for mounting movably said line attaching means on said movable member for permitting a predetermined free movement between said line attaching means and said movable member;

main spring means for urging resiliently said movable member to its initial position;

latching means at least partially disposed at the set position of said movable member for moving reciprocatively in a path of travel into and out of a latching position to fix releasably said movable member in its set position against the force of said spring means;

returning means at least partially disposed at said set position for helping move said latching means out of its latching position against the force of said main spring means;

retaining means responsive to said line attaching means for holding releasably said latching means in its latching position against the action of said returning means during relative movement between said line attaching means and said movable member without releasing said latching means and subsequently for permitting said returning means to help move said latching means out of its latching position to free said movable member relative to said fixed member in response to a sufficiently strong force applied to said retaining means via the fishing line to move said retaining means through said predetermined distance relative to said movable member for causing said retaining means to move for freeing said latching means so that said movable member returns abruptly under the force of said main spring means to said initial position, thereby jerking on the fishing line to set the fishhook in place to catch a fish; and

means for mounting swingably said retaining means to move transversely into and out of said path of travel to enable said retaining means to hold said latching means in its latching position and subsequently permitting said latching means to move reciprocatively out of its latching position.

4,212,126

FISHING ROD

David L. Barnett, Wyndholme, Back La., Bredon near Tewkesbury, Gloucestershire, England

Filed Sep. 19, 1978, Ser. No. 943,824
Int. Cl.[2] A01K *87/04*
U.S. Cl. 43—24 **15 Claims**

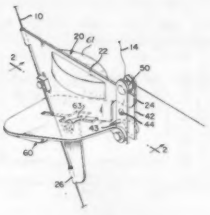
1. A fishing rod having a hollow shaft with a handle end and a tip end, defining an interior passageway which tapers from the handle end towards the tip end, a line entry opening to the interior of the shaft adjacent the handle end of the rod and a line exit opening from the interior of the rod adjacent the tip end of the shaft, and a series of spaced line supporting guides positioned within the shaft so than an internal passageway through each line guide is aligned with the rod axis, the internal passageway of each guide tapering inwardly, in the direction towards the tip of the rod, from the outer edge of one end of the guide towards the other end of the guide, the guides each having a length approximately 1½ times its maximum diameter, being of progressively smaller diameter towards the tip end of the rod, and being positioned along a major proportion of the length of the rod at such spacings that, when the rod is subjected to a test load, being the maximum expected working load when the rod is used for fishing, so as to take up a curved form, an imaginary straight line drawn between the points of minimum internal radius of the passageways defined by the wall sections of an adjacent pair of line guides will not contact the curved inner wall of the hollow shaft.

4,212,127

POWER PLANE FOR TRANSPORTING FISHING LINE

Dennis Daniels, Quilecene, Wash.

Filed Feb. 12, 1979, Ser. No. 11,237
Int. Cl.[2] A01K *97/00*
U.S. Cl. 43—43.12 **8 Claims**



1. Fishing line transporting apparatus for automatically moving a releasable light fish line down a heavily weighted weight line moving through the water and returning to the surface of the water when the light line is released, comprising:

a carrier,

means slidably coupling the carrier for movement along the heavily weighted line,

means on the carrier for releasably holding a light fish line and lure,

a hydrodynamic responsive plane on said carrier for transporting the carrier up and down the weight line depending on its angular attitude as the weight line is moved laterally through the water,

means for releasably holding the hydrodynamic responsive plane in a down mode condition with the surface angled to provide a downward force vector on the carrier, and

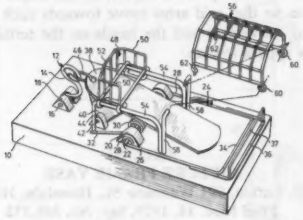
means for changing the angular attitude of the hydrody-

namic responsive plane to an up mode condition with the surface angled to provide an upward force vector on the carrier when the fish line is released from the fish line holding means thereby returning the carrier to the water surface to be reused.

4,212,128
ANIMAL TRAP

Reginald W. Vance, R.R. 1, Maki Rd., Sault Ste. Marie, Ontario, Canada (P6A 5K6)

Filed Dec. 1, 1978, Ser. No. 965,609
Int. Cl.[2] A01M *23/30*
U.S. Cl. 43—81 **6 Claims**



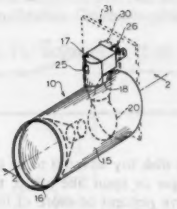
1. An animal trap comprising:
a base;
a platform pivotally mounted in said base;
a trigger member movably mounted on said base and coupled to said platform;
a generally U-shaped striker wire pivotally secured to said base and pivotally movable between a set position and an opposed striking position;
spring means baising said striker wire towards its striking position;
the trigger member being movable, in response to movements of said platform, between a first, set position in which it engages the striker wire to hold said striker wire in the set position, and a second, releasing position in which it releases the striker wire;
a bait receptacle mounted above said platform and presenting one open side in a direction away from the trigger member and towards the striking position of the striker wire, so as to allow access to bait in said bait receptacle from one lateral direction only, said bait receptacle being positionally adjustable twards and away from the trigger member relative to the platform;
a cover for said bait receptacle, said cover having an open side coinciding with the open side of the bait receptacle and being movable between a covering position in which it is above the bait receptacle, and an open position permitting top access thereto for bait loading purposes;
and means for releasably holding said cover in its covering position.

4,212,129
INSECT TRAP

Billy R. Shumate, Hayes, N.C., assignor to Richard Dean Roberts, Wilbar and Robert L. Brewer, Winston-Salem, both of, N.C., part interest to each

Filed Apr. 23, 1979, Ser. No. 32,496
Int. Cl.[2] A01M *1/04*
U.S. Cl. 43—113 **7 Claims**

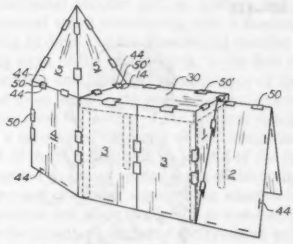
1. An insect trap, comprising:
(a) a cylindrical body member having at least one open end;
(b) a funnel member removably fitted in each such open end;
(c) a unitary lamp assembly including at least a switch, lamp mount and lamp, said assembly being mounted in the sidewall of said body member with said lamp being located internally and said switch being located externally thereof;
(d) an AC prong assembly secured to and having prongs extending outwardly and externally of said body member and adapted to mate with an AC wall outlet for supporting said body member therefrom and providing a source of power for energizing said lamp; and
(e) circuit means operatively associated with said lamp and prong assemblies enabling said lamp to be energized through power supplied through said prong assembly.



4,212,130
PLAYHOUSE WITH ELEMENTS BASED ON TWO MODULAR UNITS

June F. Walker, 3010 Anacapa Pl., Fullerton, Calif. 92635

Filed Apr. 7, 1978, Ser. No. 894,499
Int. Cl.[2] A63H *33/10*
U.S. Cl. 46—12 **11 Claims**

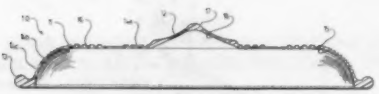


1. A modular playhouse comprising a plurality of sections, means for supporting said playhouse, said supporting means having a vertical portion determining its height and generally horizontal portion with sides determining its length and width, and means for connecting said sections ones to the others, the shapes and sizes of said sections regulated by two related modular units, a first of said modular units being essentially a right triangle so proportioned that the hypotenuse thereof is essentially twice as long as the base thereof, a second of said modular units being essentially a rectangle, the length and width of said second modular unit essentially corresponding in measurement to said hypotenuse and said base of said first modular unit respectively, said sections comprising at least one substantially triangular panel having its linear dimensions regulated by the linear dimensions of said first modular unit, and at least one substantially rectangular panel having its linear dimensions regulated by the linear dimensions of said second modular unit, and said supporting means having the linear dimension of its height regulated by the linear dimension of the height of said first modular unit and having the linear dimension of at least one of its sides regulated by the linear dimension of said hypotenuse of said first modular unit.

4,212,131
HIGH UTILITY DISK TOY

Alexander D. Ross, Jr., 332 Sugartown Rd., B-32, Devon, Pa. 19333

Filed Dec. 6, 1976, Ser. No. 748,274
Int. Cl.[3] A63H 27/00
U.S. Cl. 46—74 D 30 Claims



1. A high utility disk toy adapted to be thrown through the air, spun on a finger or spun like a top, that can be stacked (having seventy-five percent or more of its height fitting into or over another) that can be thrown as one, with in flight separation and having a full flight formation factor, comprising:

a. a concave/convex central dome having a smooth sloping surface extending down to;

b. an intermediate crown that radiuses into;

c. a rounded peripheral concave/convex disk hull that extends outwardly and then down on a larger radius to;

d. a flat bottom horizontal rim wing flight stabilizer that extends outwardly at right angles from the base of the disk hull to its outer rounded perimeter.

4,212,132
DOLL WITH EMBRACING ARM MOVEMENT

Dov Lewanoni, Brooklyn, N.Y., assignor to Goldberger Doll Mfg. Co., Inc., Brooklyn, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,320
Int. Cl.[2] A63H 5/00
U.S. Cl. 46—118 9 Claims

1. A doll with embracing arms and concomitant clapping hands movement which comprises a torso, two legs dependent from said torso, a head, said head being mounted on the upper end of said torso, and two arms, each of said arms being pivotally mounted on one side of the upper end of said torso so that each of said arms is partially rotatable about a substantially vertical axis, a rectangular parallelepiped receptacle, said receptacle being longitudinally disposed within said torso and having an open front side, each of the pivotal mountings of said arms being attached to said receptacle and being disposed external to one side edge of said receptacle proximately at the top of said receptacle, a movable panel, said movable panel having dependent leg panels which slidably engage the interior of the side walls of said receptacle, with a protuberance on the surface of each leg panel extending into a rectilinear slot in a side wall of said receptacle, each of said slots being substantially perpendicular to the rear side of said receptacle so that when said movable panel is depressed, each of said protuberances slides in a slot and said movable panel moves from a spaced away position parallel to the rear side of said receptacle to a displaced position closer to and parallel to the rear side of said receptacle, a pair of lever arms, each of said lever arms extending into said receptacle from the pivotal mounting of one of said arms, so that displacement of a lever arm when said movable panel is depressed pivots the arm of the doll about said pivotal mounting, a flexible resilient connection member, said connection member being under tension and extending rectilinearly between said pair of lever arms, and contact means at each upper corner of said movable panel, each contact means contacting and displacing one of said lever arms when said movable panel is depressed and displaced into said receptacle, so that said arms move towards each other in an embracing movement and the hands on the terminal ends of said arms appear to clap.

4,212,133
PICTURE FRAME VASE

Lindsey D. Lufkin, 991 Waimanu St., Honolulu, Hi. 96814

Filed Mar. 14, 1975, Ser. No. 558,372
Int. Cl.[2] A01G 5/00; A47G 1/24; G09F 19/00
U.S. Cl. 47—41 R 4 Claims

1. A picture vase comprising a relatively large vertically oriented decorative plate having a front face and a rear surface and having a generally rectangular opening with a larger horizontal dimension and a small vertical dimension positioned in a central portion of the vertically oriented plate and slightly below a center of the plate and having a frame surrounding the plate and extending outward from the plate, the frame extending forward from the front surface of the plate and rearward from the rear surface of the plate, means connected to the frame for hanging the frame with the decorative plate disposed vertically on a wall and having a relatively small water pocket container with an open top and a closed bottom and sides mounted on a rear surface of the plate, the water pocket container having an upward opening adjacent the opening in the central portion of the vertically oriented plate, wherein the container is a flat laterally extended container mounted flush on said plate beneath the opening, the container having an upward opening commensurate with the opening in the plate, the container being relatively wide in a direction along the plate and narrow in a direction transverse to the plate, and the container tapering laterally inward and downward, and the frame extends rearward from the plate for a distance greater than a thickness of the container, whereby the frame rests against a wall and whereby flowers positioned on the front of the plate and having stems extending downward and rearward through the opening in the container are held and watered by the water pocket container wherein the narrow rearward dimension of the container holds the stems so that the flowers remain upright.

4,212,134

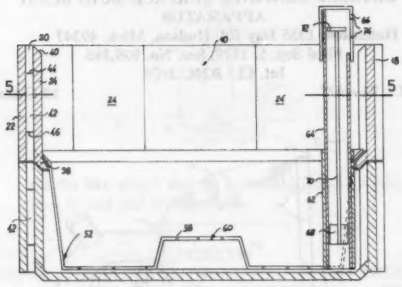
MODULAR PLANTING BOX SYSTEM INCLUDING LIQUID LEVEL AND INSERT

Hans J. B. Brokamp, Schmiedgasse 21, D-8950 Kaufbeuren, Fed. Rep. of Germany

Continuation of Ser. No. 813,429, Jul. 6, 1977, abandoned. This application Oct. 5, 1978, Ser. No. 948,997

Int. Cl.[2] A01G 9/02

U.S. Cl. 47—82 1 Claim



1. An improved planting box assembly being formed of a plurality of individual planting boxes each being stacked upon one another, said boxes are formed by a frame having a polygonal cross-section with vertical walls, vertical ribs and vertical channels at said walls; said ribs and channels are formed of a complementary cross-section; said channels being formed of a pair of individual planting boxes stacked one upon another to define vertical slide guides for ribs of another planting box, enabling lateral connection of respective planting boxes of identical shape; supporting means arranged in each of the said channels defining structure to support said ribs, said improvement comprising: disposing a planting box vertically in an offset position with respect to a first planting box, by half of the height of the other planting boxes; each individual planting box having a lower edge portion formed at each vertical wall, a lower one of a given pair of planting boxes having a bottom wall connected with the lower edge portion; a pot-like insert having an outer edge portion at its upper end, disposed on the lower edge portion of an upper one of said pair of planting boxes, said insert having an overall height which is at least equal to the interior height of the respective planting boxes; a bottom portion of the pot-like insert being disposed to be spaced from a bottom of the lower one of said pair of planting boxes; a plurality of small openings and recess means of a reverse cup-like shape formed in said insert adapted to retain a solid nutrient preparation therein; and a vertical tube formed at the inner side of one side wall of said pot-like insert and an extension tube extending over the whole height of a plurality of planting boxes stacked one upon another, for insertion into the vertical tube to thereby receive a displaceably arranged float body connected by a vertical rod and an indicator element disposed at an upper end of the vertical rod, the indicator element being surrounded by a sleeve-like head of transparent material fitted over an upper end of the extension tube.

4,212,135

METHOD OF ADAPTIVE CONTROL OF A RECESSING CYCLE ON A GRINDING MACHINE AND APPARATUS THEREFOR

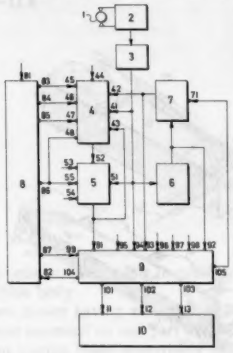
Miroslav Mirsch; František Rosberg, and Miroslav Růžička, all of Prague, Czechoslovakia, assignors to Tos Hostivar, narodni podnik, Prague, Czechoslovakia

Filed Feb. 23, 1979, Ser. No. 14,557

Claims priority, application Czechoslovakia, Feb. 23, 1978, 1137-78

Int. Cl.[2] B24B 49/16, 1/00

U.S. Cl. 51—165.71 8 Claims



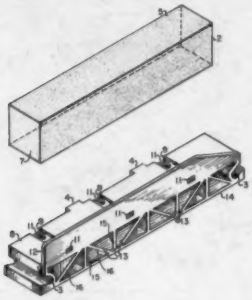
5. An apparatus for adaptive control of a recessing cycle, comprising a pick-up head touching a machined workpiece, a dimensional encoder unit, a comparator unit and a cycle control unit, means connecting an output of the pick-up head to an input of the dimensional encoder unit, an analysis unit, a synthesis unit, a removal speed determining unit, a function unit, means connecting an output of the dimensional encoder unit to a first collecting input of the analysis unit, to the first pick-up input of the synthesis unit, to a first sorting input of the comparator unit and to an input of the removal speed determining unit, means connecting the output of the removal speed determining unit to a second sorting input of the comparator unit and to an input of the function unit, an output of the function unit being connected to a third sorting input of the comparator unit and to a second collecting input of the analysis unit, an output of the analysis unit being connected to a second pick-up input of the synthesis unit, an output of the synthesis unit being connected both to a first reference input of the comparator unit and to a third collecting input of the analysis unit, a cycle control unit, a first keying input of the analysis unit being connected to a first control output of the cycle control unit, a second keying input of the analysis unit being connected to a second control output of the cycle control unit, a third keying input of the analysis unit being connected to the third control output of the control block, a fourth keying input of the analysis unit being connected together with a fifth keying input of the synthesis unit to a fourth control output of the cycle control unit, a fifth control output of the cycle control unit being connected to a locking input of the comparator unit, a first auxiliary output of the comparator unit being connected as a feedback path to an auxiliary control input of the cycle control unit, a second auxiliary output of the comparator unit being connected to a sampling input of the function unit, a first output of the comparator unit being connected to an input of a roughing control of action units of a grinding machine, a second output of the comparator unit being connected to an input of a cycle end control of the action units of the grinding machine and a third output of the comparator unit being connected to an input of a finish grinding control of the action units of the grinding machine, the synthesis unit being provided with a first auxiliary input and with a second auxiliary

input, the analysis unit being provided with an order input, the cycle control unit being provided with a control input and the comparator unit being provided with a second reference input, a third reference input, a fourth reference input and a fifth reference input.

4,212,136
ABRADING ELEMENTS

Glenn A. Stertzbach, Getzville, N.Y., assignor to Vonscot Industries, Clarence, N.Y.

Filed Dec. 15, 1977, Ser. No. 860,910
Int. Cl.[2] B24D *5/00, 17/00*
U.S. Cl. 51—204 **22 Claims**

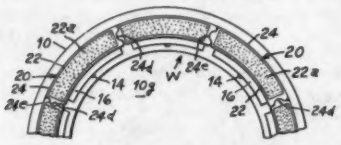


1. An abrading element comprising a preformed abrasive article having an abrading face and an opposite attachment face, in a molded plastic unitary support structure, said unitary support structure having a flat support face to which the attachment face of the abrasive article attaches and said support face having voids therein such that from about 70 to about 90 percent of the surface area of the attachment face of said abrasive article is in contact with said support face and from about 10 to about 30 percent of said surface area is opposite said voids, and said support face being resiliently supported by a triangular truss support bridge intimately molded therewith.

4,212,137
SEGMENTAL GRINDING WHEEL AND COMPOSITE ABRADING SEGMENTS THEREFOR

Charles V. Rue, Petersham, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jul. 20, 1978, Ser. No. 926,539
Int. Cl.[2] B24D *5/08, 7/06*
U.S. Cl. 51—206.4 **10 Claims**



1. A composite abrading segment of precise size and interfitting arcuate shape for an annular segmental grinding wheel wherein a plurality of segments are assembled in interfitting engagement with each other and clamping to suitable chuck means adapted for mounting on drive means for rotation therewith about an axis comprising:

a preformed bonded abrasive segment of simple arcuate shape having

a working face; and

a shell of precise size and more complex interfitting arcuate shape encasing at least a portion of each side except the working face of the abrasive segment and having

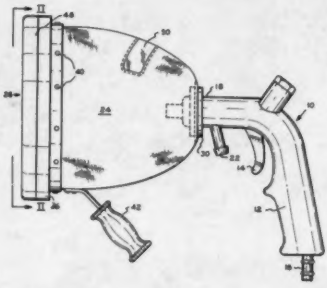
at least one projection on an end of the shell adapted for interfitting engagement with a depression on an adjoining segment of the grinding wheel, and

at least one depression on an opposite end of the shell adapted for receiving a projection on another adjoining segment of the grinding wheel.

4,212,138
PORTABLE CONFINED SURFACE SAND BLAST APPARATUS

Gary Hutchison, 1355 Day Rd, Hudson, Mich. 49247

Filed Sep. 5, 1978, Ser. No. 939,245
Int. Cl.[2] B24C *3/06*
U.S. Cl. 51—427 **10 Claims**



1. A portable sandblast apparatus for mounting upon a hand held sandblast nozzle comprising, in combination, a flexible shroud having an open end and a sandblast nozzle receiving orifice spaced from said open end, nozzle mounting means defined at said orifice for firmly and sealingly receiving a sandblast nozzle, air previous sand particle filter means defined in said shroud, and an annular flexible surface seal attached to said shroud open end for establishing a seal with the surface to be cleaned, the flexibility of said shroud permitting a nozzle within said mounting means to be freely moved for directional purposes while said seal is maintained in a sealed relationship with the surface to be cleaned.

4,212,139
HEAVY DUTY DRAWBAR

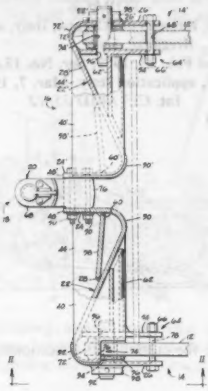
Stephen G. Shoup, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 11, 1977, Ser. No. 814,380
Int. Cl.[2] E04C *3/32*
U.S. Cl. 52—721 **1 Claim**

1. A fabricated beam structure comprising,

a primary plate having spaced substantially parallel opposite end wall portions generally symmetrically positioned with respect to a plane parallel thereto and midway therebetween and having apertures therethrough for entry of external fastener means and the like and being connected by a diagonally disposed intermediate wall portion, and a pair of substantially flat plates disposed on opposite sides of said primary plate and secured thereto in edgeward substantially congruent overlying relation to form a box-like structure but providing a pair of oppositely outwardly

opening pockets respectively adjacent to said end wall portion for ready access to said external fastener means



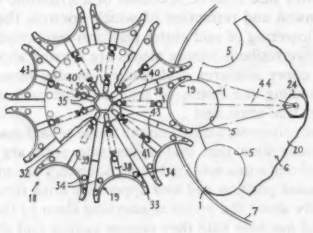
and the like which may be extendable through said apertures in said end wall portions.

4,212,140

APPARATUS FOR RESTORING DISTORTED ARTICLES TO THEIR TRUE CROSS-SECTIONAL SHAPE

Bertram G. Poynton, Bromham, and Phillip S. Waite, Kempston, both of England, assignors to Ti Fords Limited, Kempston, England

Filed Apr. 23, 1979, Ser. No. 32,271
Int. Cl.[3] B65B *7/28, 63/02;* **B21D** *1/06*
U.S. Cl. 53—289 **10 Claims**



1. Apparatus for successively advancing distortable articles of nominally circular cross-section and for restoring distorted articles, at least temporarily, to their circular cross-sectional shape, comprising:

(a) two star wheels mounted side-by-side with their axes of rotation substantially parallel,

(b) means defining cooperating part-circular recesses in the peripheries of said star wheels,

(c) said part-circular recesses in each said star wheel having centres of curvature disposed on the pitch circle of the siad star wheel,

(d) said recess defining means on at least one of said star wheels being radially displaceable and being resiliently urged into radially outermost positions in which said centres of curvature of the associated recesses are disposed on said pitch circle of the star wheel, and

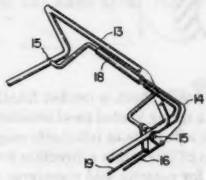
(e) means rotating said star wheels in opposite directions at substantially equal peripheral speeds, such that said recesses in said two star wheels are successively disposed in mutually opposed relation, whereby each article advanced between said star wheels is resiliently clamped between opposing ones of said recesses which serve to restore said article to its circular cross-sectional shape.

4,212,141

LAWN MOWER

Takeshi Miyazawa, Wako; Takeo Ogano, Kawagoe; Naotoshi Ono, Sayama, all of Japan, and Kazunobu Sato, Torrance, Calif., assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,569
Claims priority, application Japan, Feb. 2, 1978, 53-12144[U]
Int. Cl.[2] A01D *35/26*
U.S. Cl. 56—11.8 **11 Claims**



1. A lawn mower, comprising in combination:

(a) a machine body;

(b) a prime mover having an output shaft extending therefrom, and mounted on one part of said machine body;

(c) a lawn cutting blade operatively joined to said output shaft;

(d) means for rotating and stopping said lawn cutting blade;

(e) means for driving and stopping said machine body in a self-driving mode;

(f) pulley means to interlock said means (d) and (e);

(g) a steering handle extending from said machine body;

(h) first lever means provided at one part of said steering handle for on-and-off operation of said rotating and stopping means for said cutting blade; and

(i) second lever means also provided at one part of said steering handle and in contiguity to said first lever means for on-and-off operations of said driving and stopping means for said machine body,

said first lever means being operable independently of said second lever means, and said second lever means, when gripped, being engaged with said first lever means to cause said first lever means to rotate in its operative direction, and maintain the same at its operational position.

4,212,142

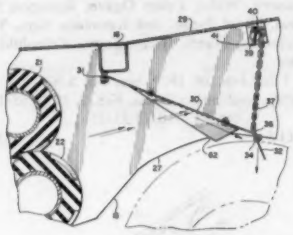
CROP DEFLECTOR CONTROL

Robert C. Miner, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed May 10, 1979, Ser. No. 37,989
Int. Cl.[3] A01D *57/26*
U.S. Cl. 56—14.4 **2 Claims**

1. A hay harvesting machine including a transverse frame, a crop cutting apparatus disposed across the front of the frame, a pair of counterrotating hay conditioning rolls disposed rearwardly of said cutting apparatus on said frame for receiving crops therefrom and propelling said crops in a rearwardly directed airborne stream, windrowing apparatus disposed on said frame rearwardly of said conditioning rolls and including a pair of rearwardly converging side deflectors for laterally consolidating said crops for deposit on the ground in a windrow, a trapezoidal crop deflecting baffle having a forward edge hinged to said frame above the crop stream and having a first position permitting substantial consolidation by said windrowing apparatus and a second position intercepting the crop stream and deflecting it downwardly for deposit in a swath, baffle position control means comprising a transversely extend-

ing rod rotatably mounted on said windrowing apparatus and having one end extending laterally externally thereof, a flexible tension member attached to the periphery of said rod and extending downwardly to a distal end attached to the rearward



portion of said baffle sheet, a ratchet fixedly attached to said transverse rod, a spring loaded pawl attached to said windrowing apparatus in a position to releasably engage said ratchet to prevent rotation of said rod in a direction lowering said deflector, and means for rotating said transverse rod.

4,212,143

DEFLECTOR MEANS FOR MOWER-CONDITIONER

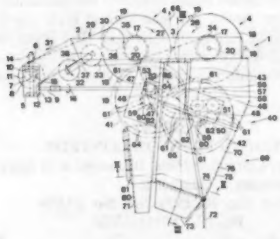
Gerard P. L. Chaumont, Dijon, France, assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 6, 1979, Ser. No. 9,977

Claims priority, application United Kingdom, Feb. 14, 1978, 5752/78

Int. Cl.[2] A01D *49/00*

U.S. Cl. 56—14.4 **20 Claims**



1. A mower-conditioner comprising:

mower means for cutting standing crop,

rotary crop conditioner and spreader means located rearwardly of the mower means for operating on the cut crop,

fixed deflector means positioned rearwardly of the crop conditioner and spreader means and

further deflector means movable between first and second positions relative to the fixed deflector means, the fixed and movable deflector means being operable in one position of the movable deflector means to form a windrow of the crop discharged from the crop conditioner and spreader means and in the other position of the movable deflector means to allow the crop conditioner and spreader means to widely spread the cut crop.

4,212,144

MACHINE FOR CUTTING AND CONDITIONING FORAGE

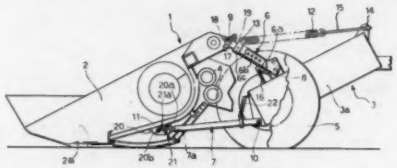
Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.P.A., Breganze, Italy

Filed Feb. 27, 1979, Ser. No. 15,691

Claims priority, application Italy, Mar. 7, 1978, 67480 A/78

Int. Cl.[2] A01D *35/12*

U.S. Cl. 56—15.8 **7 Claims**



1. In a machine for cutting and conditioning forage, of the type including:

a frame,

a cutter platform,

a cutter bar mounted on said cutter platform,

a pair of counter rotating transverse rolls on said cutter platform for conditioning the forage cut by said cutter bar,

two pairs of side arms connecting said cutter platform to said frame of said machine, each said pair of side arms comprising an upper side arm and a lower side arm, and

means pivoting each said side arm at one end thereof to said cutter platform and at the other end thereof to said frame of said machine,

the improvement wherein:

said upper side arms extend forwardly and upwardly from said pivot connecting them to said frame of said machine,

said lower side arms each consist of a hydraulic actuator extension and retraction of which controls the raising and lowering of said cutter platform respectively,

respective resilient biasing means are located above each said upper side arm, said resilient biasing means interconnecting the frame of said machine and said two upper side arms, and

abutment elements located on the frame of said machine in positions such that said upper side arms are spaced therefrom when said hydraulic actuators are in a fully retracted position and said upper side arms turn downwardly about the pivots connecting them to the frame of said machine until they engage against said abutment elements when said double acting hydraulic actuators are caused to extend from said fully retracted position, whereby said cutter platform is displaced forwardly from its lowered position prior to being raised from the ground upon extension of said hydraulic actuators.

4,212,145

TOBACCO HARVESTER WITH IN-LINE HARVESTING SYSTEM

Carlisle A. Middleton, 38 Dungarrie Rd., Baltimore, Md. 21228

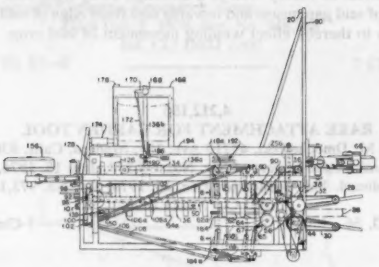
Filed Aug. 16, 1978, Ser. No. 934,096

Int. Cl.[2] A01D *45/16*

U.S. Cl. 56—27.5 **25 Claims**

1. In a tobacco harvester having a frame with means for tobacco harvester, guide means for plants, means for severing stalks of plants, conveyor means for plants, including indexing means, a spear having alternating means for gripping and holding the spear generally horizontal for impaling stalks of plants and associated therewith stick holding means for receiving stalks impaled, the improvement comprising in combination: the frame having a passage for tobacco plants entirely therethrough along the lower part thereof in a fore-and-aft direction, the severing means being adjacently forward of the

spear in position for severing stalks of plants instantly prior to said impaling on the spear, the guide means being resilient and located for resiliently biasing stalks after severance into centered alignment for said impaling on the spear, and all said



guide means, severing means, conveying means, spear and stick holding means having alignment on the frame for substantially level, straightline harvesting of tobacco plants along said passage.

4,212,146

UNIVERSAL CUTTING AND FEED ASSEMBLY FOR MULTIROW STALK-CROP HARVESTER

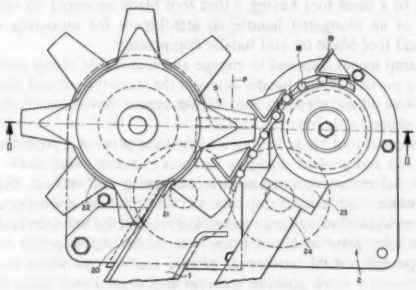
Theodor Eistert, Neustadt, German Democratic Rep., assignor to VEB Kombinat Fortschritt, Neustadt,Sachsen, German Democratic Rep.

Filed Sep. 6, 1978, Ser. No. 940,100

Claims priority, application German Democratic Rep., Sep. 9, 1977, 200955

Int. Cl.[2] A01D *45/00, 55/00*

U.S. Cl. 56—98 **10 Claims**



1. In a multirow stalk-crop harvester displaceable along the ground and having a plurality of forwardly open throats are adapted to receive a row of the crop during harvesting thereof and having at the front end of each throat at one side thereof a cutting rotor and to the other side thereof a sprocket for a conveyor chain extending back along the respective throat, the improvement comprising:

a plurality of separate and identical mounting plates each secured to said harvester at the front end of a respective throat, each plate being substantially symmetrical about a respective upright plane bisecting the respective front end and extending generally in the normal direction of displacement of said harvester, each plate defining a pair of axes substantially parallel to and symmetrically flanking the respective plane;

a pair of similar mounts on each of said plates symmetrically flanking the respective plane and centered on the respective axes, the respective cutting rotor being carried on one of the mounts of each pair of mounts for rotation about the respective axis and the respective sprocket being carried on the other mount of the respective pair of mounts for rotation about the respective axis, each of said mounts being securable to the respective plate centered on either of the respective axes; and

means including a set of gears on each of said plates symmetrical to the respective plane and interconnecting the respective rotor and sprocket for driving each rotor from the respective sprocket.

4,212,147

FODDER MOWER-CONDITIONER

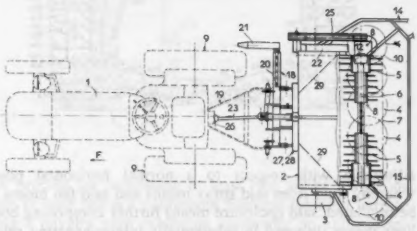
Anton Werner, Saverne, France, assignor to Kuhn S.A., Saverne, France

Filed Nov. 1, 1977, Ser. No. 847,543

Claims priority, application France, Jul. 22, 1977, 7723684

Int. Cl.[2] A01D *67/06, 75/22*

U.S. Cl. 56—228 **3 Claims**



1. A mower conditioner adapted to be connected to a tractor provided with a lift linkage, said mower conditioner comprising

cutter means adapted to be rotatably driven about at least two approximately vertical axes

at least one conditioning rotor adapted to be rotatably driven about an approximately horizontal axis

a first element of a first hitch device that entirely carries the mower conditioner in its transport position, said first element being disposed behind the cutter means and the conditioning rotor of the mower conditioner in its normal operating position

a second hitch device that advances the mower conditioner in said normal operating position, said second hitch device having means to connect it with the lift linkage of the tractor

a second element of the first hitch device releasably connectable with said first element, said second element being disposed behind the second hitch device of the mower conditioner in said normal operating position, wherein when the two elements of the first hitch device are connected the mower conditioner is entirely carried.

4,212,148

AGRICULTURAL MACHINE

J. O. Brownlee, 14 S. Evers St., Plant City, Fla. 33566

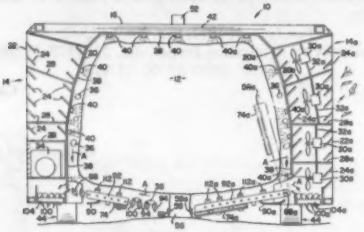
Continuation-in-part of Ser. No. 660,354, Feb. 23, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 845,946

Int. Cl.[2] A01D *46/00*

U.S. Cl. 56—328 R **22 Claims**

1. An agricultural machine for cultivating and harvesting fruit bearing trees, said agricultural machine comprising: enclosure means shaped and dimensioned for disposition in substantially surrounding relationship to the fruit bearing tree; spray means attached to said enclosure means and disposed in fluid delivering relationship to the fruit bearing tree, whereby fluids may be applied to the fruit bearing tree; air blowing means comprising a plurality of fan means attached to said enclosure means and disposed in fluid communicating relationship to the fruit bearing tree; collection means attached to said enclosure means and disposed in receiving relationship to fruit

removed from the fruit bearing tree; wheel support means attached to said enclosure means, whereby said agricultural machine may be transported along a predetermined path; and drive means operatively connected to said wheel support means in driving relation thereto; said enclosure means comprising first and second side portions disposed in spaced apart relationship to each other, and said first and second side portions each comprising inner and outer wall members, a plurality of side vane means disposed in substantially spaced apart relationship on said inner and outer wall members, said side vane means disposed within said inner wall members being



adjustable with respect to a normal horizontal position whereby fluid from said spray means and said fan means may be oscillated, said enclosure means further comprising bottom liner means disposed in substantially interconnecting relation between the bottom of said first side portion and the bottom of said second side portion; said collection means comprising a pair of first ramp means, each one of said pair being attached at one end thereof to a corresponding one of said first and said second side portions and the other end of each one of said pair being attached to said bottom liner means, whereby disengaged fruit falling on said bottom liner means is directed to one of said pair of first ramp means.

4,212,149

CROP BALING MACHINES

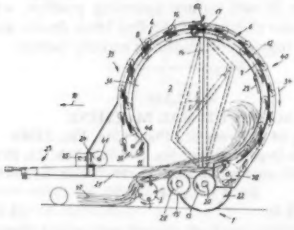
Bernard Krone, Spelle, and Wilhelm Ahler, Stadtlohn, both of Fed. Rep. of Germany, assignors to Maschinenfabriken Bernard Krone GmbH, Spelle, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,639

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2730040; Oct. 4, 1977, 2744548

Int. Cl.[2] A01D *87/00*

U.S. Cl. 56—341 **24 Claims**



1. A crop baling machine of the kind for producing wound bales and comprising a cylindrical bale winding compartment having a part cylindrical boundary wall which terminates at a front edge and a rear edge, said front edge and said rear edge defining a gap means, said gap means being disposed at the bottom of said compartment for the introduction into said compartment of crop to be wound into a bale in said compartment, and an endless conveyor means for imparting winding movement to crop introduced into said winding compartment through said gap means, said conveyor means having radially inner and outer runs extending between said front and rear edges of said gap means and having said radially inner run guided to run in circular fashion around the inside of said part cylindrical boundary wall in a direction away from said rear edge of said gap means and towards said front edge of said gap means to thereby effect winding movement of said crop.

4,212,150

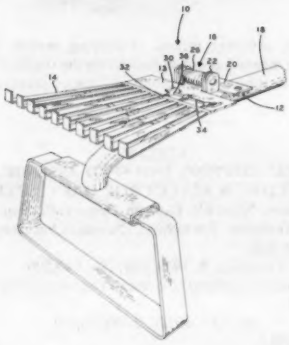
RAKE ATTACHMENT FOR GARDEN TOOL

Frank M. Dmochowski, 41210 Ave. 10½, Madera, Calif. 93637

Continuation-in-part of Ser. No. 696,178, Jun. 15, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,143

Int. Cl.[2] A01D *7/00*

U.S. Cl. 56—400.06 **7 Claims**



1. In a hand tool having a first tool blade mounted on one end of an elongated handle an attachment for mounting a second tool blade on said handle comprising:

clamp means disposed to engage and removably clamp onto a portion of said handle adjacent the mounting of said first tool blade thereon, said clamp means having a clamp plate;

a second tool blade having a blade base plate at a proximal end and ground engaging surfaces at a distal end; and

pivotal connection means interconnecting said second tool blade and said clamp means, said pivotal connection means including hinge means interconnected between said clamp plate and said blade base plate and disposed to permit pivotal movement of said second tool blade between a work position wherein said second tool blade is positioned adjacent said first tool blade and a stowed position wherein said ground engaging surfaces of said blade are positioned adjacent a portion of said handle and directed oppositely from said first tool blade, and securing means disposed to releasably secure said second tool blade in either said work position or said stowed position;

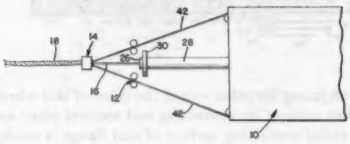
said hinge means of said pivotal connection means includes a pair of spaced parallel base hinge ears projecting from said blade base and having a pair of aligned hinge pin holes therein, and a pair of spaced parallel plate hinge ears projecting from said clamp plate and having a pair of aligned hinged pin holes; and

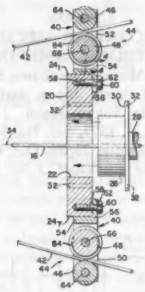
said securing means of said pivotal connection means includes a coil spring mounted coaxially on said hinge pin and contained between said hinge ears, said coil spring having legs extending from opposite ends thereof, one engaged with said clamping means plate and the other engaged with said second tool blade base with said spring stressed to resiliently urge said base into overlapping parallel relationship with said clamp plate and thereby dispose said second tool blade in its stowed position.

4,212,151
MANUFACTURE OF COMPACTED STRAND

Siegfried A. Schauffelle, Marion, Ind.; Angelo P. Barone, and Lloyd W. Beamish, both of Sycamore, Ill., assignors to The Anaconda Company, Greenwich, Conn.

Filed Oct. 5, 1978, Ser. No. 948,865
Int. Cl.[2] D02J 1/00
U.S. Cl. 57—9 7 Claims





1. Apparatus for the manufacture of cable formed by at least one dense, uniform lay of conductors received about and compacted on a core comprising

(a) strander means,

(b) a plurality of bobbins at least equal in number to the number of conductors in said lay supporting a substantially endless length of round conductor, each said bobbin being supported by said strander means whereby said conductor carried thereby is adapted to be played out during said manufacture,

(c) forming apparatus likewise supported by said strander means, said forming apparatus including a plurality of former means, continuously receiving a single conductor, said former means including

(1) a first roller having a cylindrical surface,

(2) a second roller having a surface including a plurality of grooves of a non-round cross-section therealong for accommodating round conductors of different gage and for forming said conductor to a non-round configuration, and

(3) mounting means for supporting said rollers for rotation about parallel axes, each said roller being disposed in position whereby said conductor is deformed substantially to the cross-section of said groove through rolling action of said first roller,

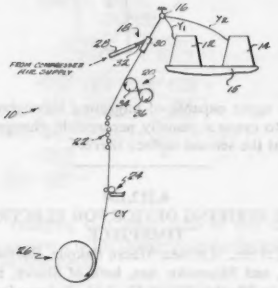
(d) a die for compacting substantially simultaneously each of said conductors of said lay on said core, and

(e) means for supporting said core for movement continuously to said die to receive said conductors of said lay, through said die and for moving said cable away from said die.

4,212,152
YARN BLENDING WITH AIR ATTACHMENT ON CONING MACHINE

Alfred R. Roman, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 14, 1978, Ser. No. 900,340
Int. Cl.[2] D02G 1/16, 3/24, 3/34
U.S. Cl. 57—207 12 Claims



1. A process for combining at least two unlike yarn ends wherein at least one is a continuous filament textured yarn to produce a novelty yarn exhibiting essentially no uniform appearance characteristics along the length thereof as a result of the combining of the two unlike yarn ends, including the steps of:

removing each of the two yarn ends from respective supply packages under predetermined tensions;

merging the two yarn ends and feeding the merged ends through an intermingling jet;

flowing a fluid within the jet in a direction countercurrent to the direction of flow of the merged ends so as to effect random intermingling along the length of the merged ends and to create random areas therealong wherein the two yarn ends exhibit a structure varying between parallel, plied, a core and effect like relationship and interlaced with respect to one another;

passing the randomly intermingled merged ends through a yarn feed system located downstream from the air jet; and

collecting the merged ends on a take-up package.

9. A randomized novelty yarn comprised of at least two unlike yarn ends, one of the yarns being a false-twist textured continuous filament yarn, a spun yarn, or a continuous knit-de-knit yarn, the other yarn being one of the two remaining unchosen yarns, said novelty yarn being randomly intermingled along its length so that said novelty yarn does not exhibit substantially any uniform appearance characteristic along the length thereof as a result of the combining of the two unlike yarns and includes random areas where the combined yarns vary between being plied, intermingled so that individual yarn characteristics are masked, parallel and configured as core and effect yarns.

4,212,153
TIME COLOR INDICATOR

Agis F. Kydonieus, New York, N.Y.; Inja K. Smith, West Orange, N.J.; Reid A. Conroy, York, Pa., and Ernest A. Pedicano, Greenwich, Conn., assignors to Herculite Protective Fabrics Corporation, New York, N.Y.

Filed Feb. 7, 1978, Ser. No. 875,723
Int. Cl.[2] G04F 13/00
U.S. Cl. 368—62 18 Claims

1. A solid, non-porous time indicator comprising a laminate which comprises

(i) a solid, non-porous polymeric substrate having a first and a second surface; and

(ii) a layer of a solid, non-porous polymeric composition adhered to the first surface of said substrate and containing an agent capable of migrating throughout said substrate to cause a visually perceptible change in the substrate at the second surface thereof.

4,212,154

TIME STRIKING DEVICE FOR ELECTRONIC TIMEPIECE

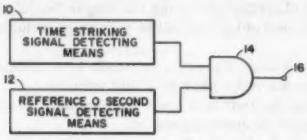
Katsuhiko Takebe, Machida; Masao Fukuda, Kurihashi; Minoru Shiratori, and Minosaku Aso, both of Showa, all of Japan, assignors to Rhythm Watch Co. Ltd., Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,733

Claims priority, application Japan, Apr. 27, 1978, 53-50406

Int. Cl.[2] G04B *21/02*; G04C *21/06*

U.S. Cl. 368—248 **6 Claims**



1. A time striking device of an electronic timepiece having a time indicating gear train driven by timepiece driving pulses, comprising a time striking signal detecting means coordinately arranged and installed in the time indicating gear train and supplying the time striking signal prior to striking time at every striking time, a reference zero second detecting means counting the timepiece driving pulses and supplying a reference zero second signal, a coincidence circuit supplying a primary time striking direction signal by the coincidence of the outputs from said two detecting means, a frequency dividing circuit for counting said timepiece driving pulses and for sending out a secondary time striking direction signal at a desired time interval, a selecting circuit selectively supplying said primary time striking direction signal from said coincidence circuit and said secondary time striking direction signal from said frequency dividing circuit to a time striking section.

4,212,155

TIME DETECTING SWITCH FOR CLOCK

Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

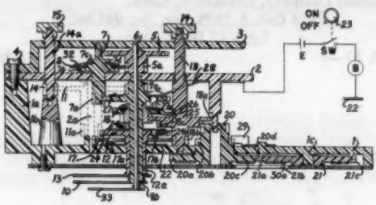
Filed May 22, 1978, Ser. No. 908,556

Claims priority, application Japan, May 23, 1977, 52-66689[U]

Int. Cl.[2] G04B *23/10*; G04C *21/16*

U.S. Cl. 368—250 **7 Claims**

1. In combination, a time detecting switch for connection in series with the electrically actuated time signalling circuit of a time signalling clock having a time wheel and a detecting wheel both rotatably mounted coaxially, and a phase detecting type slide switch disposed between the time wheel and the detecting wheel, comprising: one of said wheels comprising an electrically conductive hub having a flange with a radial contacting surface at one end of the hub, an insulating disk and a sectoral switch plate around said hub, the disk being sandwiched between said plate and said flange and the plate being mechanically and electrically connected to the other end portion of said hub facing the other wheel; the other of said wheels having a sliding contact for contacting said sectoral plate; and wherein the radial contacting surface of said flange is configured to maintain uninterrupted continuous sliding contact with the time signalling circuit of the clock.



4,212,156

STEP MOTOR CONTROL MECHANISM FOR ELECTRONIC TIMEPIECE

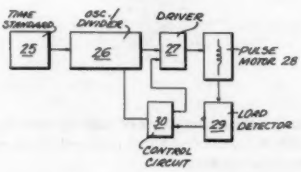
Yoshikazu Kawamura; Minoru Hosokawa; Sakiho Okazaki, and Hiroshi Ishii, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 6, 1977, Ser. No. 839,867

Claims priority, application Japan, Oct. 6, 1976, 51-120146

Int. Cl.[2] G04C *3/00*

U.S. Cl. 368—85 **5 Claims**



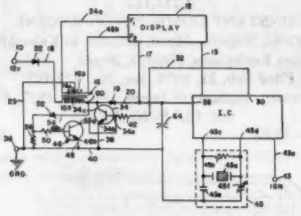
1. An electronic timepiece having a step motor and comprising a quartz crystal vibrator producing a high frequency time standard signal, divider circuit means for producing low frequency time signals in response to said high frequency time standard signal; a gear train driven by said step motor and adapted to place the step motor in one of a first normally loaded condition and a second loaded condition; load detection means for producing load detection signals in response to detecting said second loaded condition of said step motor, driving and control means intermediate said divider circuit means and said step motor for receiving the low frequency signal from the dividing circuit means, said driving and control means being adapted to apply a first drive signal having a first pulse width to said step motor in response to said low frequency signal, said driving and control means in response to said load signal being applied thereto, being adapted to apply to said step motor a second drive signal having a pulse width of longer duration than said first pulse width, said step motor including a drive coil for receiving said first drive signal produced by said driving and control means, said load detecting means being adapted to detect the occurrence of signal peaks induced in said drive coil after said drive signal is applied thereto, and in response to detecting a shift of the signal peak induced in the drive coil when the step motor is placed in a second loaded condition produce said second load detection signal.

4,212,157

SOLID STATE CLOCK

LaVerne L. Frey, Delavan, Wis., assignor to Borg Instruments Inc., Delavan, Wis.

Filed Aug. 21, 1978, Ser. No. 935,215
Int. Cl.[2] G04C *3/00*
U.S. Cl. 368—87 **34 Claims**



1. In a solid state clock of the like required to provide an accurate and reliable time indication when operated from a power supply having undesired voltage fluctuations, the combination comprising:

display means for providing a visual display of time or other information in accordance with predetermined signal inputs;

circuit means coupled between said power supply and said display means for supplying said predetermined signal input to said display and for developing a first switching signal having a predetermined frequency;

voltage multiplying means coupled between said power supply and said circuit means for multiplying the variable voltage output of said power supply and for supplying said multiplied voltage to an input of said circuit means;

first electrical switching means responsive to said first switching signal and coupled to said circuit means and said multiplying means for establishing a nominal, effective, duty cycle for said voltage multiplying means; and

second electrical switching means comprising a break-down device having a first, high impedance state for all signal outputs from said multiplying means below a predetermined level and a second, low impedance state for all signal outputs from said multiplying means above said predetermined level, said second electrical switching means being coupled to said first switching means for regulating the effective duty cycle of said first switching means and the effective duty cycle of said multiplying means in accordance with whether said break-down device is in said first or said second state.

4,212,158

ELECTRONIC TIMEPIECE

Munetaka Tamaru, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 947,151
Int. Cl.[2] G04C *3/00*; G04B *27/00*
U.S. Cl. 368—80 **7 Claims**

1. An electronic timepiece comprising: display means having a plurality of hands for displaying time;

first means for producing a first pulse train of a first predetermined frequency;

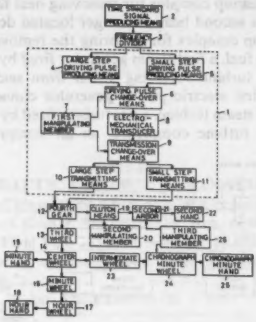
second means for producing a second pulse train of a second predetermined frequency less than said first predetermined frequency;

switch means for selecting one of said first or second pulse trains and providing the selected pulse train at its output;

an electro-mechanical transducer for

converting said selected pulse train into rotary motion;

transmission means for transmitting the rotary motion of said electro-mechanical transducer to said hands of said display means, said transmission means having first and second drive ratios; and



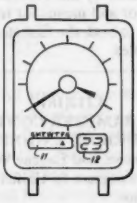
means for changing said drive ratio of said transmission means in response to the change in said selected pulse train by said switch means.

4,212,159

ELECTRONIC TIMEPIECE

Robert T. Noble, Dallas; Perry A. Penz, and Burton W. Marks, both of Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 13, 1978, Ser. No. 877,041
Int. Cl.[2] G04B *19/30, 19/06*
U.S. Cl. 368—82 **8 Claims**



1. An electro-optic display having a first layer of display elements disposed in configuration radiating from near the central point of the display and defining radial bars, a second layer of elements disposed in cooperative relationship with said first layer, said second layer of elements being disposed in a plurality of annular concentric groups operatively associated with said radial bars, a first plurality of individually separate electrical paths interconnecting said elements of said first layer into predetermined serially connected groups, each group containing at least two of said radial bars, and a second plurality of electrical conductors separately connected to the elements of said second layer and providing means for individually applying electrical potentials thereto, said first plurality of individually separate electrical paths including a common electrical hub at the central point of said display to effect electrical connections between a predetermined plurality of said radial bars.

4,212,160

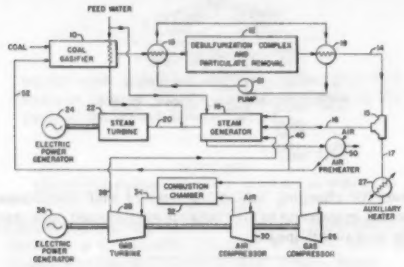
COMBINED CYCLE POWER PLANT USING LOW BTU GAS

Henry J. Blaskowski, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1977, Ser. No. 863,390
Int. Cl.[2] F02B *43/08*; F02C *7/02*
U.S. Cl. 60—39.12 **1 Claim**

1. An electric power generating plant comprising a coal

gasification complex for producing a gaseous fuel, a gas cleanup complex downstream of the coal gasification complex, a first heat exchanger between the coal gasification complex and the gas cleanup complex for removing heat from the gaseous fuel, and a second heat exchanger located downstream of the gas cleanup complex for restoring the removed heat back to the gaseous fuel, a first steam generator fired by said gaseous fuel, a steam turbine receiving steam from said first steam generator, a first electric power generator connected to and driven by said steam turbine, a gas turbine fired by said gaseous fuel, said gas turbine comprising an air compressor, a gas



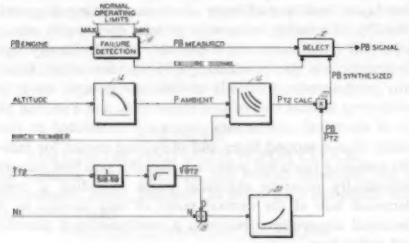
compressor, a combustion chamber, and a turbine section, with both the air and gas compressors being driven by the gas turbine, a second electric power generator connected to and driven by said gas turbine, means for introducing the hot, oxygen-rich exhaust gases from the gas turbine to the first steam generator, a second steam generator associated with the coal gasification complex, means for transporting steam from the coal gasification complex to the steam turbine, an air preheater where air is heated by the combustion exhaust gases of the first steam generator and means for transporting heated air from the air preheater to both the first steam generator and the coal gasification complex.

4,212,161

SIMULATED PARAMETER CONTROL FOR GAS TURBINE ENGINE

David M. Newirth, Vernon, and Eugene W. Koenig, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 1, 1978, Ser. No. 901,899
Int. Cl.[3] F02C *9/28, 9/44*
U.S. Cl. 60—39.28 R **2 Claims**



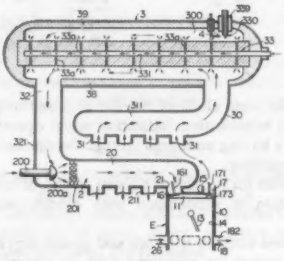
1. For a gas turbine engine having compressor and burner powering aircraft, means for providing a synthesized parameter of burner pressure to be substituted for a measured parameter of burner pressure in the event of failure of said measured parameter signal as determined by comparing the value of the measured signal with predetermined maximum and minimum normal operating limits of said signal comprising, a first function generator responding to Mach No. and altitude for producing a first signal indicative of the compressor inlet pressure, a second function generator responsive to compressor inlet temperature and compressor rotor speed for producing a second signal and means for combining said first signal and said second signal for producing an output signal whose value is approximate the failed measured parameter signal of burner pressure.

4,212,162

CONSTANT COMBUSTION ENGINE

Akira Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Feb. 21, 1978, Ser. No. 879,497
Claims priority, application Japan, Feb. 21, 1977, 52-18462
Int. Cl.[2] F02G *3/02*
U.S. Cl. 60—39.63 **10 Claims**



1. A constant combustion engine comprising:
means for supplying a predetermined quantity of air;
a prime mover connected to said air supply means, which alternately repeats compression of said predetermined quantity of supplied air and expansion of a mixture as a working gas;
means for supplying a predetermined quantity of fuel;
a combustion device in which said compressed air and said predetermined quantity of fuel are supplied from said prime mover and said fuel supply means, respectively, to be mixed, ignited and burned therein, thereby producing the combustion products;
means for supplying a predetermined quantity of water provided at the downstream of said combustion device; and
a vaporization device in which said combustion products are charged from said combustion device and said predetermined quantity of water is supplied from said water supply means to be sprayed into said combustion products, thereby producing the mixture of said combustion products and water vapor as said working gas;
said mixture of the combustion products and water vapor being supplied to said prime mover from said vaporization device and expanded therein to drive the prime mover.

4,212,163

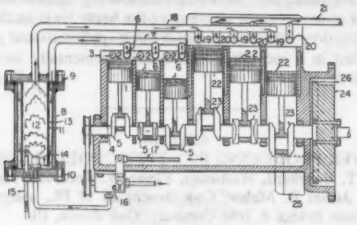
HEAT ENGINE

Stanley J. Mikina, 4782 Coquina Key Dr., St. Petersburg, Fla. 33705

Filed Jun. 16, 1978, Ser. No. 915,907
Int. Cl.[2] F02G *3/02*
U.S. Cl. 60—39.63 **12 Claims**

1. A hot gas engine based on the classical Joule cycle and comprising the combination of an air compressor, an external combustor for continuously burning a fluid fuel with the compressed air, a plurality of engine cylinders for expansion of the products of combustion, and a pair of series inlet poppet valves and actuating cams having separate cam shafts per engine

cylinder so phased as to provide a short interval period of gas admission to each engine cylinder at different times for making



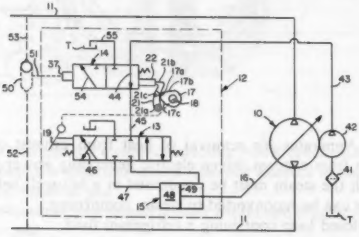
the expansion ratio substantially equal to the compression ratio for maximum thermal efficiency.

4,212,164

VARIABLE DELIVERY PUMP CONTROL SYSTEM

John E. G. Young, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Dec. 6, 1978, Ser. No. 966,835
Int. Cl.³ F04B *49/00*
U.S. Cl. 60—452 **3 Claims**



1. A variable delivery hydraulic pump control system comprising a variable delivery pump adapted to be connected through a closed loop to a reversible motor, and a pump control mechanism in a housing adapted to be secured to the pump, the mechanism comprising direction control valve means for governing directional flow of fluid through the pump, a pressure compensating valve means for governing pressure output of the pump, and pump control cylinder means connected to a stroke control cam of the pump for governing the rate of flow of fluid through the closed loop, the pump control cylinder means being governed jointly by the direction control valve means and the pressure compensating valve means, wherein improved maximum pressure regulating means in the pump control mechanism housing comprises:

(a) a cam plate coaxially connected to a directional control rotatable valve spool of the directional control valve means, the cam plate having an outer periphery that is continously radially variable from a maximum radial point to a minimum radial point for either direction of rotation of the cam from the maximum radial point, and

(b) a cam follower lever operable about a pivot at one end to actuate a reciprocating sleeve in the pressure compensating valve means with its other end,

(c) the cam follower lever having a cam follower detent at an intermediate point between its ends adapted to bear upon the periphery of the cam plate and maintain the reciprocating sleeve in a maximum operated position in one direction of its reciprocating operation when the control valve means is in a center position,

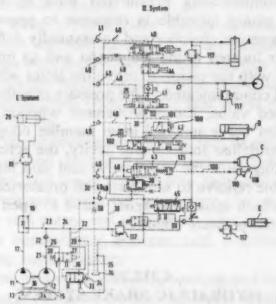
(d) whereby, upon actuation of the direction control valve means from a normal position for designation of operation of a motor in either direction, maximum flow is permitted in the closed loop except as limited by the positioning of the reciprocating sleeve of the pressure compensating valve means.

4,212,165

HYDRAULIC CONTROL ARRANGEMENT

Wilhelm Zirps, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 14,879
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808196
Int. Cl.² F15B *13/06, 13/09*
U.S. Cl. 60—486 **8 Claims**

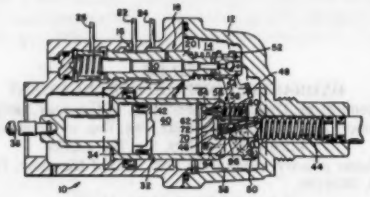


1. A hydraulic control arrangement for distribution of pressure fluid to at least two systems, that is a first system including a first source of pressure fluid constituted by a pump having an inlet communicating with a fluid-filled tank and an outlet, a first hydraulic consumer, a first conduit connecting said outlet of the first pump to said first consumer, and a fluid-flow regulating valve in said first conduit and a second system including a second source of pressure fluid constituted by a second pump having an inlet communicating with said tank and an outlet, a plurality of additional hydraulic consumers, a second conduit connecting said outlet of the second pump to said plurality of additional consumers, a plurality of multiple position valves in said second conduit, one for each of said additional hydraulic consumers and each movable between a neutral position and at least one working position and each providing in said neutral position free flow of fluid through said second conduit; a cross-conduit connecting said first conduit upstream of said fluid-flow regulating valve with said second conduit; a branch conduit connected at one end to said second conduit upstream of the connection of the latter to said cross-conduit; a bypass valve in said branch conduit movable between a first position permitting flow of fluid through said branch conduit and a second position preventing such flow; spring means acting at one end of said bypass valve and biasing the latter to said first position and a control pressure acting on the other end of said bypass valve for biasing the latter to said second position, said control pressure corresponding to the respective higher consumer pressure of an additional hydraulic consumer connected by the respective multiple position valve to said second conduit, whereby when none of said additional hydraulic consumers is connected to said second conduit only a partial fluid stream from one of said pumps will flow through said second system.

4,212,166
HYDRAULIC BRAKE BOOSTER AND RELIEF VALVE THEREFOR

Louis S. Tang, Mishawaka, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 11, 1978, Ser. No. 904,946
Int. Cl.[2] B60T 11/32
U.S. Cl. 60—582 4 Claims

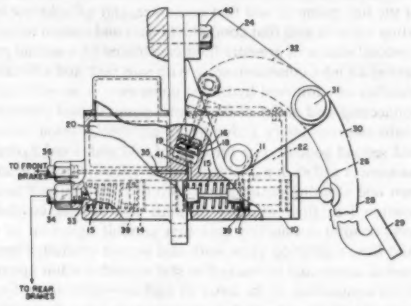


1. In a hydraulic brake booster having a housing substantially defining a pressure chamber, a control valve within the housing communicating pressurized fluid to the pressure chamber, a piston movable in response to pressurized fluid within the pressure chamber and substantially defining a storage chamber located inside the piston and an input member cooperating with the piston to move the latter when the pressurized fluid communicated to the pressure chamber is below a predetermined value, the improvement wherein said piston carries a relief valve and said input member cooperates with said piston to define an actuating cavity, the actuating cavity communicating with the relief valve and said input member being movable relative to said piston to pressurize the actuating cavity which causes the relief valve to open the storage chamber to the pressure chamber.

4,212,167
HYDRAULIC BRAKE SYSTEM

Lloyd L. Pruett, 1210 Whitney Dr., Columbia, Tenn. 38401

Continuation-in-part of Ser. No. 588,670, Jun. 20, 1975, abandoned. This application Mar. 28, 1979, Ser. No. 24,712
Int. Cl.[3] B60T 7/02
U.S. Cl. 60—594 4 Claims

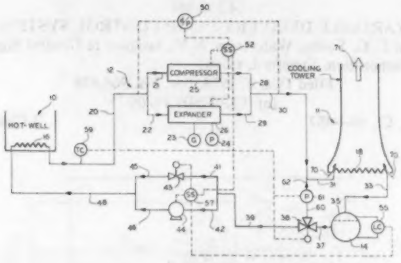


1. Hydraulic brake apparatus comprising a brake pedal connected to a master cylinder containing a piston actuatable by applying force to said pedal to generate hydraulic pressure ahead of said master cylinder piston for pressurizing a slave through conduit means, an auxiliary cylinder containing a second piston, an hydraulic fluid line leading from said master cylinder to said auxiliary cylinder for causing movement of said second piston in response to hydraulic pressure generated by said master cylinder piston and a brake lever pivotally mounted on a fixed pivot and having a rest position from which it is movable in two directions, said brake lever being connected to a piston rod of said second piston on one side of the fixed pivot and being in abutment connection with a piston rod of the master cylinder piston on the other side of the fixed pivot, the pressure generated by the master piston upon pivoting of the brake lever in one direction being transmitted to the second piston to cause pivoting of the brake lever in the same one direction, whereby an initial force applied to said pedal is amplified in a recycling and in an incrementally increasing manner.

4,212,168
POWER PRODUCING DRY-TYPE COOLING SYSTEM

Craig T. Bouchard, Westmont; Elmer W. Rothrock, Hinsdale, and James B. Maher, Oak Brook, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sep. 15, 1978, Ser. No. 942,766
Int. Cl.[2] F01K 9/00, 23/04
U.S. Cl. 60—661 17 Claims



1. Apparatus for removal of heat from exhaust or spent steam from a steam driven electric generating power plant in which the steam must be condensed in a hot-well before the water can be reconverted to steam, comprising:

a closed loop containing a refrigerant fluid,

a condenser having a refrigerant inlet and outlet in the closed loop and positioned to effect spent steam condensation in the hot-well by indirect heat exchange with refrigerant fluid flowing through the condenser,

a heat exchanger having a refrigerant inlet and outlet in the closed loop and adapted to be located in a cooling tower to effect indirect heat exchange between refrigerant fluid flowing through the heat exchanger and atmospheric temperature air flowing through the cooling tower to cool the refrigerant fluid,

a compressor and an expander positioned parallel to one another in the loop between the outlet of the condenser and the inlet of the heat exchanger,

a liquid pump and an expansion valve positioned parallel to one another in the loop between the outlet of the heat exchanger and the inlet of the condenser,

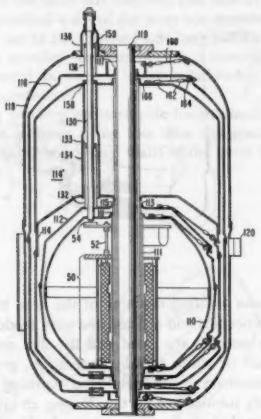
control means to activate the compressor and open the expansion valve, and inactivate the expander and the liquid pump, when the temperature of the atmospheric air flowing through the cooling tower is too high to effect efficient heat exchange and condensation of the refrigerant in the cooling tower heat exchanger without compressing the refrigerant, and

control means to activate the expander and the liquid pump, inactivate the compressor and close the expansion valve, when the temperature of the atmospheric air flowing through the cooling tower is low enough to condense refrigerant vapor in the cooling tower heat exchanger at a pressure lower than the pressure of the refrigerant vapor exiting the condenser, to thereby extract energy by means of the expander for use in producing power or work.

4,212,169
CRYOSTAT FOR SUPERCONDUCTING NMR SPECTROMETER

George D. Kneip, Jr., Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 21, 1978, Ser. No. 879,292
Int. Cl.[2] F17C 7/02
U.S. Cl. 62—45 4 Claims

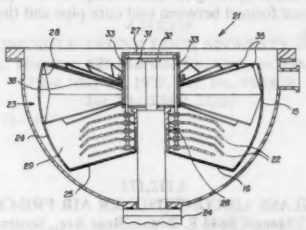


1. In a cryostat for a superconducting NMR spectrometer,
a substantially spherical central reservoir adapted to contain a first liquified gas,
a superconductive solenoid housed within said central reservoir, and
means for venting said central reservoir to the exterior of said cryostat,
first radiation shield means surrounding said substantially spherical reservoir and partially surrounding said venting means,
shell means surrounding said first radiation shield and partially surrounding said venting means and a second reservoir for containing a second liquified gas, said second reservoir disposed in thermal contact with said shell in the region above said central reservoir, whereby said shell and said reservoir form an isothermal body at the temperature of said second liquified gas,
said first radiation shield further comprising a thermally conductive means contacting said venting tube at a point intermediate along the length of said tube, whereby said radiation shield is cooled to a selected temperature by the vapor of said first liquified gas escaping through said vent tube, said selected temperature intermediate the temperature of said liquified gas and the temperature of the external surrounds of said first radiation shield,
an outer radiation shield surrounding said isothermal body and partially surrounding said venting means, said outer radiation shield further comprising a thermally conductive means contacting said venting means tube whereby said outer radiation shield is maintained at a temperature intermediate said second liquified gas and ambient temperature by the vapor of said first liquified gas escaping through said vent tube, and
a hermetically sealed containment vessel surrounding said outer radiation shield and partially surrounding said venting means.

4,212,170
CRYOPUMP

Otto Winkler, Fürstentum, Liechtenstein, assignor to Oerlikon Buhrle USA Incorporated, Hudson, N.H.

Filed Apr. 16, 1979, Ser. No. 30,098
Int. Cl.[2] B01D 5/00
U.S. Cl. 62—55.5 15 Claims

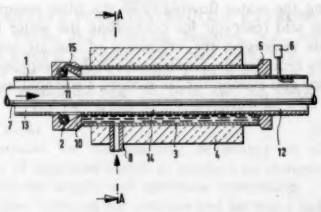


1. A high vacuum cryopump apparatus comprising:
a vacuum chamber means;
a multiple stage cryogenerator means comprising a low temperature heat sink means and a lower temperature heat sink means both located within said chamber means;
cryopump surface means located within said chamber means in heat conducting contact with said lower temperature heat sink means;
a radiation shield enclosure means located within said chamber means and enclosing both said cryopump surface means and said lower temperature heat sink means, said shield enclosure means being supported by said low temperature sink means and defining an inlet opening permitting gas conductance between said chamber and said cryopump surface means;
baffle means located in said inlet opening and being shaped and arranged so as to obstruct all direct rectilinear paths between said chamber means and said cryopump surface means; and
heat conductive bridge means directly connecting said baffle means to said low temperature heat sink means so as to provide a good thermally conductive path therebetween.

4,212,171
DEVICE IN THE FORM OF A DOUBLE-WALLED PIPE FOR COOLING CONTINUOUS PROFILES

Erhard Soecknick, Düsseldorf, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,343
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 7731245[U]
Int. Cl.[2] F25D 13/06
U.S. Cl. 62—63 7 Claims



1. In a device in the form of a double-walled pipe for the cooling of continuous profiles, in which a space formed between the core pipe and the jacket pipe is equipped with con-

nections for the inlet of a low-boiling, liquefied gas and the outlet of the vaporized gas, the improvement being said core pipe having a cross section which is fitted to the cross section of the continuous profile which is to be cooled, mounting means detachably mounting said core pipe into said jacket pipe whereby said core pipe may be replaced by a different core pipe in accordance with the cross section of the profile being cooled, and at least one injection orifice in said core pipe near the profile intake opening for the feeding of the vaporized gas into the space formed between said core pipe and the continuous profile.

4,212,172

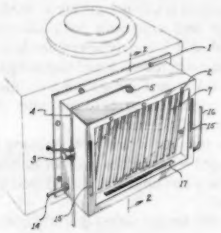
FIBERGLASS AIRCONDITIONER AIR PRE-COOLER

Anthony C. Manno, 8644 E. Bonnie Rose Ave., Scottsdale, Ariz. 85253, assignor to Anthony C. Manno, Scottsdale, Ariz.

Filed Jun. 20, 1978, Ser. No. 910,885

Int. Cl.[2] F28D *5/00*

U.S. Cl. 62—305 **4 Claims**



1. An apparatus for cooling the condensor coils of an air condltioning system comprising an evaporator, compressor and condensor, said apparatus having four sides, a front and a rear, fiberglass vane means located on the front, said vane means being so arranged as to provide moisture pick up by turbulent air thus cooling such air, a laminated fiber filter assembly filled with nylon material for separating the moisture from the air and protecting the condensor coils, said filter assembly located on the rear of the apparatus against the condensor coils, a plastic spray nozzle mounted above the vanes for directing cooling water on to the interior of the vanes, a fiber glass water ramp located at the bottom of the vanes and the filter assembly, a reservoir mounted below the ramp for collecting the water flowing from the filter assembly, drain means in said reservoir for controlling the water level, said apparatus increasing the efficiency of the air conditioning system by reducing the running time of the compressor and the condensor and evaporator fan motors, a solenoid used to control the flow of water.

4,212,173

Patent Not Issued For This Number

4,212,174

LAY-IN YARN FEED

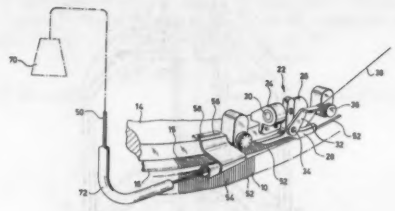
Michael W. Shepherd, 29 Park Rd., Cross Hills, Near Keighley, Yorkshire, England

Filed Aug. 12, 1977, Ser. No. 824,176

Claims priority, application United Kingdom, Aug. 25, 1976, 35280/76

Int. Cl.[2] D04B *9/16*

U.S. Cl. 66—9 R **6 Claims**



1. A circular knitting machine of the type having cylinder needles, dial needles and at least one yarn feeder and wherein the cylinder needles are lifted and the dial needles are projected as part of stitch forming operation, provided with a relatively stationary guide member comprising an axially extended mainly tubular eye portion having an inlet end located outside the angle between the verges of said cylinder needles and said dial needles and an outlet end located inside the angle between the verges of said cylinder needles and said dial needles, and a finger portion extending in the angle between the verges of said cylinder needles and said dial needles so that the cylinder needles may pass along the outer side of said guide member and the dial needles may pass above said guide member, said eye portion merging into said finger portion and said finger extending over at least the region where said cylinder needles begin to lift at the leading end of said yarn feeder.

4,212,175

CABLE LOCK FOR PORTABLE PROPERTY

Gilbert Zakow, Bayside, N.Y., assignor to Componentry Research & Development Enterprises, Inc., Bayside, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,692

Int. Cl.[2] E05B *73/00*

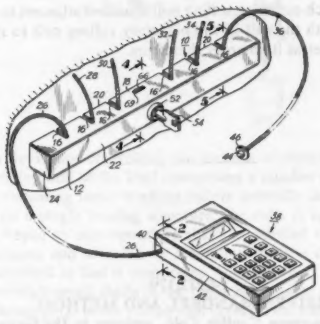
U.S. Cl. 70—58 **28 Claims**

1. A cable lock for portable property comprising a rectangular parallelepiped locking box, said locking box having an inner box member and an outer box member, each of said box members having three longitudinal walls and two opposed end walls;

the three longitudinal walls of each of said box members consisting of two opposed side longitudinal walls and a middle longitudinal wall, the two opposed side longitudinal walls of each of said box members being spaced apart in registration and straddling the middle longitudinal wall

of the respective box member, each longitudinal edge of the middle longitudinal wall being joined to a longitudinal edge of one of the two opposed side longitudinal walls of each box member, the inner box member being slidably engageable with and mateable with the outer box member, so that when said box members are mated and said locking box is integrally assembled, and when the opposed side longitudinal walls of said inner box member are within said outer box member, the middle longitudinal wall of the inner box member is then opposed to the middle longitudinal wall of the outer box member, and each of the opposed side longitudinal walls of the inner box member is contiguous with one of the opposed side longitudinal walls of the outer box member, and said inner box member is mated to and mounted in mirror image relationship within said outer box member;

the spacing between opposed side longitudinal walls of the inner box member being less than the spacing between opposed side longitudinal walls of the outer box member,



the spacing between opposed end walls of the inner box member being less than the spacing between opposed end walls of the outer box member, so that the inner box member is receivable within the outer box member, the width of the opposed side longitudinal walls of both the inner box member and the outer box member being substantially equal, the middle longitudinal wall of one of the box members being mountable to a fixed mounting surface;

means to detachably secure the outer box member to the inner box member;

a plurality of openings in said one side longitudinal wall of the inner box member, so that a continuous rectilinear passage is provided into said inner box member;

one side longitudinal wall of said outer box member being provided with a plurality of parallel slots juxtaposed with said openings, each of said slots extending from a free edge of said outer box member perpendicularly inwards from said free edge and towards the middle longitudinal wall of said outer box member and terminating short of said middle longitudinal wall;

a plurality of flexible cable means, an end of each of said cable means being receivable through one of the slots in said one side longitudinal wall of the outer box member and also through the juxtaposed one of the openings in said one side longitudinal wall of the inner box member; and

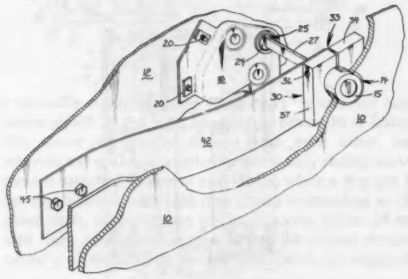
means to secure at least one end of each of said cable means when extended through the juxtaposed slot and opening, at least one discrete item of portable property being mountable to each of said cable means.

4,212,176

AUTOMOBILE TRUNK LOCK SECURITY DEVICE

Charles C. Hegedus, 121 Macleod Ct., Conyers, Ga. 30207

Filed May 30, 1978, Ser. No. 910,674
Int. Cl.[2] E05B *17/00*
U.S. Cl. 70—417 **3 Claims**



1. A security device for an automobile trunk having a trunk lid of double wall construction with a lid opening fromed in an outer wall and with a trunk latch housing mounted on an inner wall, and a cylinder lock mounted within the outer wall opening having a lock stem extending inwardly from the lid into a keyway of the trunk latch housing, and with the security device comprising a block defining a central aperture mounted snuggly about the cylinder lock overlaying the inside surface of the trunk lid about the lid outer wall opening whereby prying of the lock outwardly from the trunk lid to expose and gain access to the trunk latch housing keyway through the trunk lid opening is inhibited by the block: and a resilient mounting plate mounted on the trunk lid inner wall and to said block spring biasing said mounting block towards the latch housing whereby prying of the lock inwardly into the trunk to enable the cylinder lock to fall and expose the trunk latch housing keyway is inhibited by the mounting plate by maintaining the lock and block over the keyway.

4,212,177

APPARATUS FOR CONTINUOUS EXTRUSION

Francis J. Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

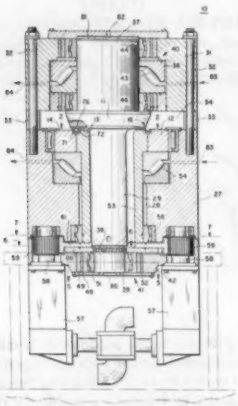
Division of Ser. No. 664,611, Mar. 8, 1976, Pat. No. 4,094,178.
This application Mar. 27, 1978, Ser. No. 890,875
Int. Cl.[2] B21B *45/02;* B21C *31/00*
U.S. Cl. 72—41 **25 Claims**

1. Apparatus for continuously deforming an elongated workpiece of indefinite length to produce an elongated product of indefinite length, said apparatus comprising:

first means, mounted for rotation and having a radially extending first surface, including an annular groove therealong, for engaging with said first surface a first peripheral portion of the elongated workpiece, said first means further including an annular recess, located inwardly from said annular groove in a direction away from said first

surface of the first means, and a liner shrink-fitted into said annular recess in the first means, said liner including said annular groove, said liner further having a portion thereof extending generally outwardly from said annular recess along said second arcuate area of the annular groove so that the liner will be forced inwardly into the annular recess along said first arcuate area of the annular groove including said first and second locations during the rotation of said first and second means and will apply compressive stresses of increasing magnitude to the elongated workpiece as the elongated workpiece advances from said first location to said second location while within the annular groove;

second means, mounted for movement upon rotation of said first means and having a second surface facing said first surface of said first means, for engaging with said second



surface a second peripheral portion of the elongated workpiece such that the elongated workpiece will be gripped between said first surface of the first means and said second surface of the second means and will advance from a first location to a second location upon the rotation of the first means and the simultaneous movement of the second means;

a deforming agency so located adjacent to said second location as to receive and deform the elongated workpiece upon the advance of the elongated workpiece to said second location;

third means for rotating said first means; and

fourth means, rendered effective simultaneously with operation of said third means, for so moving said second means with said first means as to advance the elongated workpiece toward and into said deforming agency.

4,212,178

ROLLING MILL

Erich Bretschneider, Meerbusch, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 862,857, Dec. 21, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,632

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657823; Dec. 21, 1976, 2657839

Int. Cl.[2] **B21B** *17/06, 1/00, 39/00*

U.S. Cl. 72—97 **4 Claims**

1. Seamless tube rolling mill, comprising:

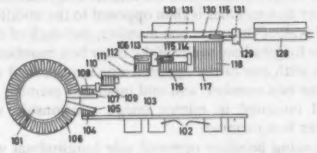
(a) a reheat furnace for billets,

(b) a piercing mill for forming a longitudinal bore through the billet,

(c) a first longitudinal conveyor extending in spaced, parallel relationship to the axis of the piercing mill at the exit side thereof,

(d) a cross conveyor extending from the said longitudinal conveyor to a second longitudinal conveyor,

(e) a planetary rolling mill located at the discharge end of the second longitudinal conveyor and include a guide sleeve for carrying the billet, a concentric mandrel adapted to extend through the bore in the billet and carried for longi-



tudinal movement relative to the planetary rolling mill, means locking the mandrel in place when its downstream end reaches the work area of the mill, and a tube-like feed device slidably carried in the space between the mandrel and the guide sleeve for pushing the billet along the mandrel and through the said work area, and

(f) a stretch-reducing rolling mill mounted adjacent to and in line with the exit of the planetary rolling mill to receive the billet as it emerges therefrom.

4,212,179

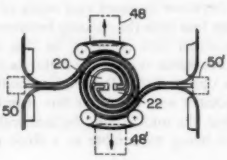
DRIVEN MANDREL AND METHOD

Tristan D. Juergens, Conifer, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Oct. 12, 1978, Ser. No. 950,656

Int. Cl.[3] **B21C** *47/02*

U.S. Cl. 72—148 **15 Claims**



1. A mandrel useful in winding together a plurality of flexible strip members, comprising:

a first curvilinear perimetric driving portion;

a second curvilinear perimetric driving portion juxtaposed from the first driving portion;

an isthmus interconnecting the first and second driving portions and thereby defining with the first and second driving portions juxtaposed slots for receiving ends of the flexible strip members to be wound; and

said first and second driving portions being offset generally laterally with respect to one another, in a direction parallel to the centerline passing through the openings of the slots, and in an amount from about 70 to about 85 percent of the combined thickness of the flexible strip members to be wound.

4,212,180

DEVICE FOR CONTROLLING THE ROTATION OF THE WORKING ROLLERS IN A TUBE ROLLING MILL

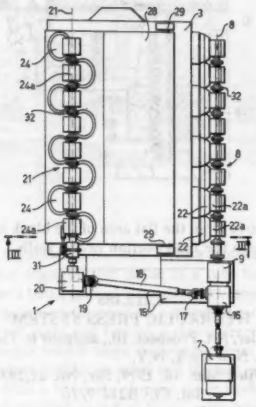
Filippo Cattaneo, and Rosolino Corolla, both of Milan, Italy, assignors to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Oct. 18, 1978, Ser. No. 952,604

Claims priority, application Italy, Nov. 8, 1977, 29430 A/77

Int. Cl.² B21B *35/02*

U.S. Cl. 72—249 **4 Claims**



1. A device for controlling the rotation of working rolls in a tube rolling mill of the kind comprising a number of housings, each containing three working rollers normally in axial alignment on a single bearing structure, the rolls in each housing being keyed to corresponding shafts controlled from outside the housing and actuated by a single rotor, the device being characterised in that it comprises:

three high-speed shafts (**8, 14, 21**) borne outside a plurality of housings (**2**) in the rolling mill (**1**) and extending parallel to the common axis of the housings (**2**),

a reduction gear (**22, 23, 24**) for each working roll (**4, 5, 6**) of each single housing (**2**), borne outside the housing and axially engageable or disengageable from the corresponding shaft (*4a, 5a, 6a*) of the aforementioned roll (**4, 5, 6**),

a bevel gear (*22a, 23a, 24a*) between each reduction gear (**22, 23, 24**) and one of the high-speed shafts (**8, 14, 21**), and

a kinematic transmission (**9, 11, 13–16, 15, 20**) between the single motor (**7**) and each high-speed shaft (**8, 14, 21**).

4,212,181

MECHANISM FOR AUTOMATICALLY CENTERING SUB-GUIDE ROLLERS AND FOR ADJUSTING CLAMPING CONDITION OF SUB-GUIDE ROLLERS, FOR USE IN MATERIAL GUIDING APPARATUS OF ROLLING MILL

Hiroaki Shimada, Sappora, Japan, assignor to Kotobuki Sangyo Kabushiki Kaisha, Sapporo, Japan

Filed Jan. 8, 1979, Ser. No. 1,888

Int. Cl.² B21B *39/16*

U.S. Cl. 72—250 **2 Claims**

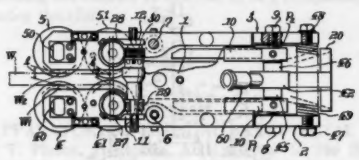
1. An automatic centering and clamping adjusting mechanism for adjusting the clearance between a pair of sub-guide rollers by swinging each of said rollers at each side of the axis of feed of the material to be rolled, for use in a material guiding apparatus of a rolling mill, characterized by comprising the following features A, B, C, D and E:

(A) first and second roller holders **2,3** adapted to be swung around respective pivot points **6,7**, said roller holders **2,3** carrying at their front portions guide rollers **4,5** and having support shafts **25** rotatably attached thereto;

(B) sub-guide rollers **41,51** rotatably carried by respective eccentric shaft pins **26** which are unitary with respective support shafts **25**;

(C) a left hand screw gear **27** fixed to one end of said support shaft **25** on said first roller holder **2**, and a right hand screw gear **28** fixed to one end of said support shaft **25** on said second roller holder **3**;

(D) a left hand screw pinion **29** and a right hand screw pinion **30** which can be rotated coaxially by manual operation and engaging respectively one of said left hand screw gear **27** and said right hand screw gear **28**, and



(E) manually rotatable shafts **13,14** carrying said left hand screw pinion **29** and right hand screw pinion **30** of feature (D) above are axially aligned with each other, and wherein a dog clutch adapted to allow only sliding movement is attached to one of said shafts, while a dog pin **19** for engagement with said dog clutch is attached to the other shaft, whereby said left hand screw pinion **29** and said right hand screw pinion **30** can be rotated simultaneously when said dog pin and dog clutch are engaged.

4,212,182

INDIRECT METAL EXTRUSION AND TUBE PRESS AND A SEALING PLATE AND A PRESSURE PLATE THEREFOR

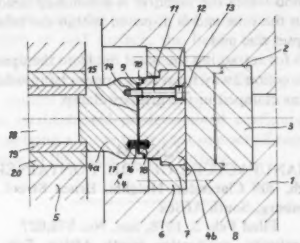
Weinfried Steyvers, Dusselford-Oberkassel, and Franz-Josef Zilges, Monchengladbach, both of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,770

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1977, 2739904

Int. Cl.² B21C *26/00, 29/00*

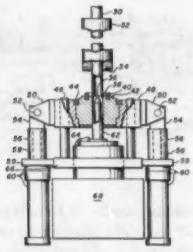
U.S. Cl. 72—253 A **6 Claims**



1. An indirect metal extrusion press having a sealing plate for sealing one end of a bore in a billet container, a moving cross-head, and a pressure plate attached to the moving cross-head, the moving cross-head pressing the pressure plate against the sealing plate and the sealing plate against the billet container, the pressure and sealing plates forming a pressure transmission path which includes a pair of mutually adjacent surfaces lying in parallel planes at right angles to the extrusion axis, said surfaces engaging with each other to prevent relative movement between them parallel to said planes but to permit relative movement along the axis of extrusion, compressible spacing members being provided between the surfaces to force

them apart when pressure is not being transmitted along the path, to leave an air gap between the surfaces.

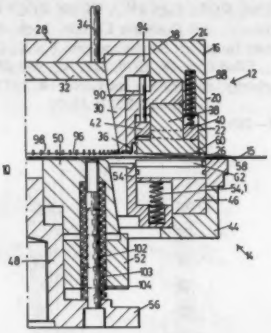
4,212,183
UPSETTING OF TUBE ENDS
Thomas L. Mabery, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 11, 1978, Ser. No. 968,523
Int. Cl.[2] B21K *21/12*
U.S. Cl. 72—318 **4 Claims**



1. An apparatus for upsetting the end of a tube to achieve a desired inner diameter and a desired outer diameter at the upset tube end, comprising:
   a. a gripper clamp positioned for clamping the tube on a portion of the tube away from the tube end in order to hold the tube stationary during the upsetting operation;
   b. a mandrel having a diameter equal to the desired inner diameter and being positionable inside the tube end during the upsetting operation so as to prevent reduction of the inner diameter of the upset tube end to less than the desired inner diameter;
   c. a one-piece upset die having a tube cavity shaped so as to prevent the outer diameter of the upset tube end from increasing to more than the desired outer diameter;
   d. means for forcing the upset die onto the tube end so as to cause the tube cavity to receive the tube end;
   e. means for positioning the mandrel inside the tube end before the upsetting force is applied and for withdrawing the mandrel from inside the upset tube end;
   f. means for applying a longitudinal compression force to the tube end while the mandrel is positioned inside the tube end an the tube end is disposed within the tube cavity of the upset die; and
   g. means for retracting the upset die from the upset tube end in a direction away from the gripper clamp while the tube remains clamped in the gripper clamp.

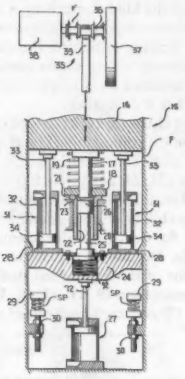
4,212,184
MANUFACTURE OF FOIL CONTAINERS
Hans Falch, 205 Clarendon Heights, Bruce Street, Hillbrow, Johannesburg, South Africa
Filed Feb. 3, 1978, Ser. No. 875,027
Claims priority, application South Africa, Feb. 10, 1977, 77/0778
Int. Cl.[2] B21D *22/00*
U.S. Cl. 72—340 **18 Claims**

1. A method of manufacturing containers from flat foil which comprises a sequence of steps including providing a flat foil blank, indenting the blank with alternate upwardly and downwardly directed indentations which extend in radial directions, initially drawing a shape which has a base and a first portion of the walls in the center of the blank and which initially leaves a remaining flat area of the blank around said base and said first portion of the walls during the drawing, lightly guiding the remaining flat area of the indented blank, which is being drawn into the walls so as to fold the flat area into regular double fold pleats, and flattening the double fold pleats



before they move from the flat area of the blank into an area in which they form the final portion of the walls.

4,212,185
HYDRAULIC PRESS SYSTEM
Donald E. Miller, Mt. Prospect, Ill., assignor to The Continental Group, Inc., New York, N.Y.
Filed Mar. 16, 1979, Ser. No. 21,283
Int. Cl.[2] B21J *9/10*
U.S. Cl. 72—354 **11 Claims**



1. A press structure for attachment to a mechanical press of the type including a frame and a reciprocating ram, said press structure comprising a die sleeve having means for fixedly mounting said die sleeve relative to said press frame, a load beam, a die pad carried by said load beam for movement within said die sleeve, means mounting said load beam for movement relative to said die sleeve, a punch carried by said ram for movement through said die sleeve and for cooperating with said pad to form a closed end tubular member, and at least one load cylinder connecting said ram and said load beam for movement generally in unison and controlled relative movement, said load cylinder being a hydraulic cylinder, a low pressure hydraulic fluid source and a high pressure hydraulic fluid source, means for connecting said low pressure hydraulic fluid source to said load cylinder for filling said load cylinder during movement of said ram and punch from a top dead center position to a workpiece engaging position, and means for connecting said high pressure hydraulic fluid source to said load cylinder substantially at the time said punch engages a

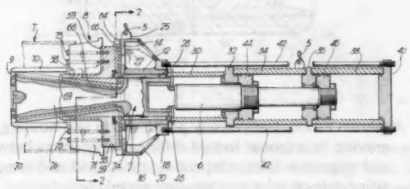
workpiece to apply a forging pressure connection between said ram and said load beam.

4,212,186

PIPE EXPANDER

Joseph F. Blattler, Suite 302, 10405 Saskatchewan Dr., Edmonton, Alberta, Canada

Filed Oct. 25, 1978, Ser. No. 954,659
Int. Cl.[2] B21D *41/02*
U.S. Cl. 72—393 **6 Claims**



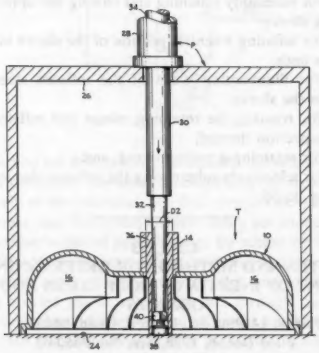
1. In a tube expander of the kind having a series of die members suitable for engaging the inside of a tube to expand this, said die members being guided for radial movement by a thrust plate and being caused to move by a mandrel movable axially within the thrust plate and having a circumferentially spaced series of slideways which slope outwardly from an inner end portion of the mandrel to an outer end thereof, each slideway co-operating with a similarly sloping inner surface of one of said die members, said mandrel being movable axially by a piston connected via a piston rod to the inner end thereof and movable in a hydraulic cylinder; the improvement wherein said slideways are at least partly recessed within said mandrel, and those portions of said mandrel, piston rod, and connecting parts therebetween which are subjected to the full tension applied by the piston rod during tube expansion all have a minimum transverse area which is larger than the area circumscribed by the innermost ends of said slideways, whereby the force which can be exerted by the mandrel is not limited by said circumscribed area.

4,212,187

METHOD AND APPARATUS FOR RESIZING TORQUE CONVERTER IMPELLER DRIVE SHAFTS

Oscar P. Scholz, 70 Laconia Ct., San Jose, Calif. 95139

Filed Nov. 24, 1978, Ser. No. 963,341
Int. Cl.[2] B21D *39/08*
U.S. Cl. 72—393 **3 Claims**



1. A method of resizing the hollow drive shaft hub of a torque converter impeller comprising the steps of:

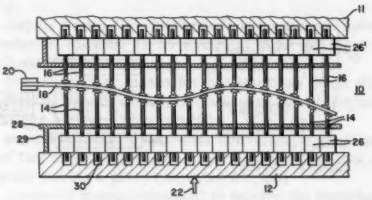
(a) uniformly heating said hub to a malleable state;
(b) rotating said impeller during said step of uniformly heating said hub to a malleable state;
(c) positioning an expanding tool within said heated and malleable hollow hub;
(d) actuating said expanding tool to radially expand said hub, while malleable, to a diameter larger than its original diameter, the rotation of said impeller during the uniform heating of said hub to a malleable state enables the actuation of said expanding tool to provide a uniform expansion of said hub; and
(e) finishing the exterior of said hub to fit a complementary bearing therefor.

4,212,188

APPARATUS FOR FORMING SHEET METAL

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 18, 1979, Ser. No. 4,422
Int. Cl.[2] B21D *11/20*
U.S. Cl. 72—413 **5 Claims**



1. Apparatus for forming sheet metal comprising two opposed support members, a first set of movable rams disposed in a matrix array on one of said support members, a second set of movable rams disposed on the other of said support members in positions corresponding to the rams of the first set, each ram of one set being substantially in alignment with a ram of the other set, all of said rams having work-engaging heads thereon, means for individually positioning the rams of one set so that their heads define a surface of predetermined configuration, means for positioning the rams of the other set so that their heads conform to said surface, the heads being adapted to engage a workpiece placed between the two sets of rams, an individual motor for each of said rams for effecting movement of the ram, control means for actuating said motors to position the rams to establish said predetermined configuration, and means for applying a force to at least one set of rams to form the workpiece to the shape of said surface.

4,212,189

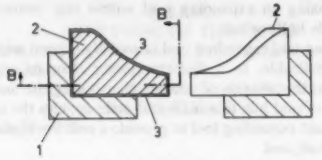
TOOL FOR ISOTHERMAL FORGING

Walter Fuchs, Nussbaumen; Gernot H. Gessinger, Birmenstorf; Roland Künzli, Mellingen, and Erwin Schönfeld, Baden, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 8, 1978, Ser. No. 932,018
Claims priority, application Switzerland, Jan. 9, 1977, 10643/77
Int. Cl.[2] B21J *13/02*
U.S. Cl. 72—478 **33 Claims**

1. Tool for isothermal forging, consisting of two die halves, at least one of which is divided at least once, characterised in

that the divided die half is assembled from individual components, of which at least those individual components which



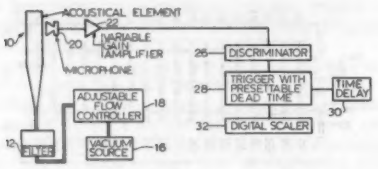
face the workpiece to be forged are provided with a thin, electrically insulating layer on at least their contact surfaces.

4,212,190

ACOUSTICAL PARTICLE DETECTOR AND METHOD

Stephen R. Coover, and Parker C. Reist, both of Chapel Hill, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Dec. 18, 1978, Ser. No. 970,636
Int. Cl.[2] G01N *15/00*
U.S. Cl. 73—28 **17 Claims**



1. An acoustical method for detecting particles in an aerosol which are above a given size, said method comprising:

(a) providing an acoustical element adapted for allowing audio pulses to be generated by aerosol particles when the aerosol is passed therethrough at high velocities and wherein said acoustical element consists essentially of a conically-shaped entry section which tapers into a capillary tube which in turn exits into an expansion chamber;

(b) establishing a pressure differential across said acoustical element to cause the flow of a representative sample of said aerosol therethrough;

(c) maintaining the flow of said aerosol sample through said acoustical element by means enabling the Reynolds number to be adjusted and with said means adjusted in accordance with a preselected Reynolds number, with said Reynolds number being selected according to the particle size range of interest and the ability of said particles within said size range to generate an acoustic pulse under the flow conditions represented by said Reynolds number; and

(d) detecting the acoustic pulses generated by said particles.

4,212,191

DIFFERENTIAL PRESSURE GAUGE

Noel H. Ethridge, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

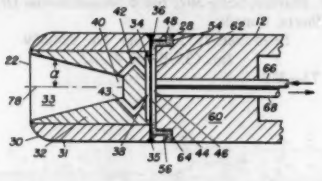
Filed Mar. 15, 1979, Ser. No. 20,890
Int. Cl.[2] G01L *7/08*
U.S. Cl. 73—861.47 **14 Claims**

1. An apparatus for measuring differential pressure that an explosion produced blast wave produces on a target comprising:

a tubular housing having a stagnation inlet end and a threaded mounting end;

removable stagnation inlet overpressure means operatively disposed in said stagnation inlet end of said housing and adapted for responsively sampling incident fluid flow of said blast wave;

compensating side-on inlet overpressure means for sampling side-on inlet pressure produced by said blast wave;



diaphram means, transversely positioned in said housing, for moving in response to said differential pressure between said stagnation inlet overpressure means and said compensating side-on inlet overpressure means; and

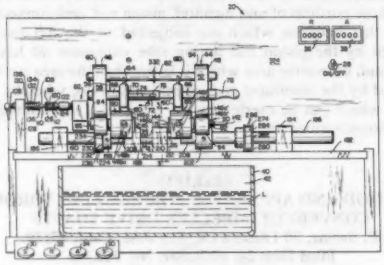
friction-free sensing means operatively positioned in said housing for detecting motion in said diaphram means and for generating an output signal in response to said motion.

4,212,192

BALLOON TESTING DEVICE

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jun. 28, 1978, Ser. No. 920,105
Int. Cl.[3] G01M *3/08, 3/38*
U.S. Cl. 73—45.5 **44 Claims**



1. A device for testing an elongated hollow elastic sleeve having a pair of opposed ends, comprising:

means for releasably retaining and closing the opposed ends of the sleeve;

means for inflating a central portion of the sleeve intermediate its ends;

means for illuminating walls of the inflated sleeve from within the sleeve;

means for rotating the retaining means and inflated sleeve for inspection thereof;

means for retaining a testing liquid; and

means for selectively submerging the inflated sleeve into the testing liquid.

4,212,193

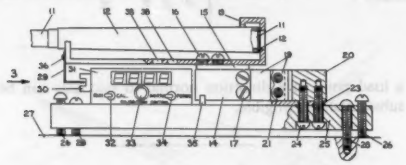
APPARATUS AND METHOD FOR DETERMINING THE MOMENT OF INERTIA OF GOLF CLUBS AND LIKE OBJECTS

John W. Turley, 14 Pine St., Oxford, Conn. 06483

Filed Dec. 6, 1978, Ser. No. 966,802
Int. Cl.[3] G01M *1/10*
U.S. Cl. 73—65 **2 Claims**

1. An apparatus for measuring the moment of inertia of an

object about any axis not passing through the center of gravity of said object, wherein a holder is provided to hold said object with such axis lying vertical, and a single resilient member located at said axis is provided to support said holder and said object in cantilever fashion, said resilient member also allowing only oscillatory rotational movement of said holder and said object in a horizontal plane about said axis, and said resilient member also providing a restoring force proportional to



the rotational displacement of said holder and said object away from their neutral position, for which the restoring force is zero, whereby said holder and said object can be displaced and then released, enabling said oscillatory rotational movement to occur, and a single measurement of period of oscillation can be made, from which the moment of inertia about said axis of said object can be calculated without any other measurement of said object being required.

4,212,194

MEASUREMENT OF EQUILIBRIUM RELATIVE HUMIDITY

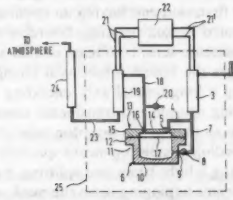
Donald C. Allen, and Alan T. Smith, both of Sittingbourne, United Kingdom, assignors to EPS (Research & Development) Limited, Sittingbourne, England

Filed Jun. 12, 1979, Ser. No. 47,736

Claims priority, application United Kingdom, Aug. 11, 1978, 33083/78

Int. Cl.[2] G01N *27/46, 33/02*

U.S. Cl. 73—73 **9 Claims**



1. A method for determining the equilibrium relative humidity over a substance, the method comprising the steps of placing a sample of the substance in a first compartment of a diffusion chamber, said first compartment being partitioned from a second compartment of said chamber by means of water vapour permeable non-hygroscopic material and said second compartment being provided with inlet and outlet ports, sweeping a dried gas at a constant rate through said second compartment via said inlet and outlet ports, and determining the moisture concentration in the gas when conditions of steady state diffusion have been reached, and calculating from said moisture concentration, the equilibrium relative humidity over the sample.

4,212,195

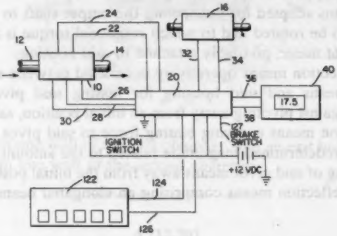
SYSTEM TO MEASURE FUEL CONSUMPTION OF A VEHICLE

Michael R. Young, 5808 Ramblewood, Brighton, Mich. 48116

Filed Aug. 30, 1978, Ser. No. 927,178

Int. Cl.[2] G01F *9/02*

U.S. Cl. 73—114 **20 Claims**



1. A system for visually indicating on a display within a vehicle employing a liquid fuel consuming engine and road engaging propelling members the approximate distance traveled per quantity of fuel used by the vehicle, said system comprising:

A. display means for visually indicating a given numerical value in response to an electrical input having a given characteristic;

B. first transducer means for converting a given distance traveled by said vehicle into a first electrical output pulse having a given characteristic;

C. second transducer means for converting a given amount of fuel used by said engine into a second electrical output pulse having a given characteristic; and

D. computer means connected to receive the electrical outputs of said first and said second transducer means and to transmit an electrical input to said display means, said computer means being operable to:

1. count the total number of first pulses for a given number of second pulses, then calculate a distance traveled per quantity of fuel used value, then place said value a given number of times N in a register, then divide the total value in the register by n to determine a quotient, said n being equal to or greater than N, then forward said quotient to said display means via an electrical input to visually indicate said quotient; then

2. count another total number of first pulses for said given number of second pulses, then calculate another distance traveled per quantity of fuel used value, then add said other value to the register and subtract the displayed value from the register, then divide said new value of the register by n to determine a new quotient, then forward said new quotient to said display means via another electrical input to visually indicate said new quotient; and then

3. continue repeating the actions of paragraph D2.

4,212,196

SINGLE BEAM TORQUE READOUT AND MULTIPLIER APPARATUS

Raymond L. Krieger, Denver; Ralph W. Weaver, Aurora, and Edward T. Able, Denver, all of Colo., assignors to B. K. Sweeney Manufacturing Company, Denver, Colo.

Filed Oct. 31, 1978, Ser. No. 956,401

Int. Cl.[2] G01L *5/24*

U.S. Cl. 73—136 R **12 Claims**

1. A torque applying and readout apparatus adapted for applying rotational torque and for measuring the torque applied by a drive motor selectively attached to said apparatus, said apparatus operatively measuring the reaction torque between a rotating drive shaft and a housing of the drive motor,

said apparatus further correlating the reaction torque to the torque applied by said apparatus and supplying an indication of the torque applied, said torque applying and readout apparatus comprising:

a housing;

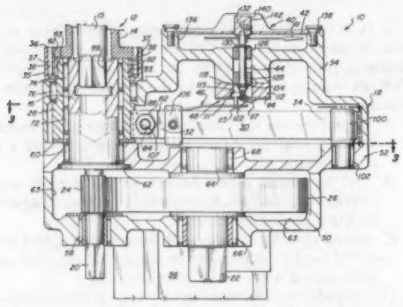
an input shaft and an output shaft rotatably received by said housing;

means operatively interconnecting said input shaft and said output shaft for rotation;

means adapted for connecting the output shaft to an object to be rotated and to which rotational torque is applied;

pivot means pivotably attached to said housing;

deflection means operatively connected between said pivot means and said housing for biasing said pivot means against pivoting away from an initial position, said deflection means applying biasing force to said pivot means in predetermined magnitude related to the amount of pivoting of said pivot means away from the initial position, said deflection means comprising an elongated beam member



having deflection characteristics and rigidly connected at one end to said pivot means and connected at the other end to said housing by means comprising a swivel post shaft pivotably attached to said housing and defining a slot extending therein, the slot receiving the other end of said beam member therein;

attaching means adapted for operatively connecting said pivot means to the housing of said drive motor, said attaching means operatively pivoting said pivoting means in predetermined relation to the magnitude of reaction torque between the housing and the drive shaft of said drive motor;

a torque meter assembly attached to said housing, said meter assembly including a meter input member for operating said assembly to indicate torque; and

means operatively connecting said pivot means and the meter input member for operatively transferring movement from said pivot means to activate the meter input member of said meter assembly.

4,212,197

STRAIN GAGE LOAD CONVERTER

Masayasu Kawai, Mitaka, and Katsumi Ishikawa, Kokubunji, both of Japan, assignors to Kyowa Electronic Instruments Co., Ltd., Tokyo, Japan

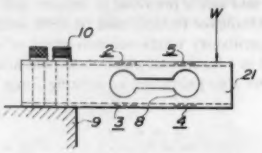
Filed Jan. 8, 1979, Ser. No. 1,403

Claims priority, application Japan, Jan. 24, 1978, 53-6536

Int. Cl.[2] G01L *1/22*

U.S. Cl. 73—141 A **3 Claims**

1. A strain gage load converter of a parallelogram shaped beam type characterized in that gage mounting surfaces of the beam are made concave shaped along a main axis of the beam so that measurement error of the load converter due to shift of



a load point in a direction normal to said axis can be made substantially negligible.

4,212,198

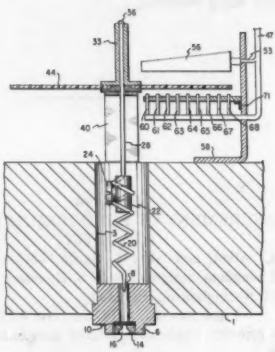
BOREHOLE PRESSURE SENSING SYSTEM

David L. Divine, Midland, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,630

Int. Cl.[2] E21B *47/06*

U.S. Cl. 73—151 **7 Claims**



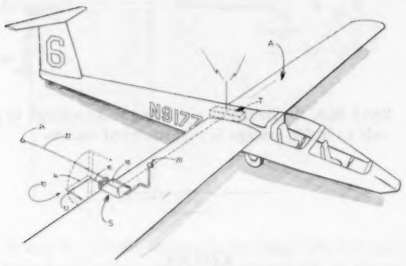
1. A bottom hole pressure sensing system comprising a tool adapted to pass through a borehole traversing an earth formation, said tool includes an outer shell having an end which enters the borehole first, said end having an opening, pressure sensitive means located in said opening, bourdon-tube means arranged with the pressure sensitive means so that as the borehole pressure changes the bourdon-tube will change its rotational position along a longitudinal axis, encoding means, including a mask having opaque and translucent areas is affixed to the bourdon-tube so that as the bourdon tube changes the mask is rotated accordingly; splitting means spacially related to the mask for receiving a light beam and splitting it to provide a plurality of light beams impinging upon the mask; a transmission subsystem of light conductors having one conductor conducting light from the surface to the splitting means and a plurality of conductors spacially arranged with the splitting means and the mask so that the mask is between said splitting means and said plurality of light conductors which conduct any of the plurality of light beams passing through said mask; surface apparatus including a source of light arranged with the one conductor of the transmission system so as to provide light to the one conductor, and means connected to the plurality of light conductors in the transmission subsystem for providing a display corresponding to the pressure in the borehole in accordance with the light conducted by the plurality of light conductors.

4,212,199

SYSTEM FOR USE IN CONDUCTING WAKE INVESTIGATION FOR A WING IN FLIGHT

Paul F. Bikle, and Lawrence C. Montoya, both of Lancaster, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 28, 1979, Ser. No. 15,983
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—861.66 **7 Claims**



1. In an improved system for use in conducting wake investigation for a wing in flight, the improvement comprising:

A. a first pressure head including a reference total pressure port adapted to be mounted on a wing and supported thereby in spaced relation with a wake as the wake is generated by the wing;

B. a second pressure head including a reference static pressure port adapted to be mounted on the wing and supported thereby in spaced relation with the wake;

C. a probe head adapted to be supported for displacement through the wake including a total pressure port and a static pressure port; and

D. pressure sensing means including a differential transducer and pressure switching means commonly connected to said heads and to said transducer for selectively connecting pairs of the ports the transducer in an opposed relationship, said switching means having included.

first connecting means for connecting the reference total pressure port of the first pressure head in communication with one side of the transducer and means for simultaneously connecting the total pressure port of the head to the other side of the transducer, and

second connecting means for connecting the reference static pressure port of the second pressure head in communication with said one side of the transducer, and means for simultaneously connecting the static pressure port of said probe head in communication with said other side of the transducer.

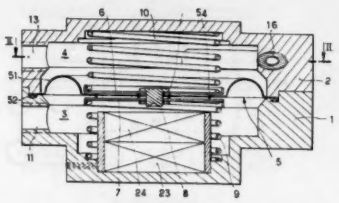
4,212,200

INSTANTANEOUS FLOW METER FOR AUTOMOBILE VEHICLES

Alain Rousseau, Paris, and Francois Ramel, Levallois, both of France, assignors to Transformateurs BC and EFFA, France

Filed Aug. 14, 1978, Ser. No. 933,210
Int. Cl.² G01F *1/38*
U.S. Cl. 73—861.47 **6 Claims**

1. A flow meter connectable to the piping in which circulates the fluid whose flow is to be measured, said flow meter comprising: flow restrictor means for introducing a calibrated pressure drop; a hermetic enclosure connected to said piping; a flexible membrane imperviously separating said enclosure into a first and a second chamber; means for positioning said membrane allowing it to move resiliently in a direction perpendicular to its surface; and a transducer component converting said movement into a flow-indicating electrical signal, said flow restrictor means being housed in the second chamber, and communication piping between the two chambers, fitted in one wall of the enclosure, making the flow restrictor means communicate with the first chamber, a fluid intake hole being



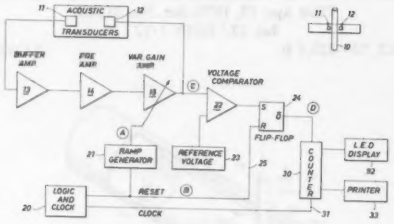
formed in one wall of the first chamber, and an exit hole being formed in one wall of the second chamber.

4,212,201

ULTRASONIC SENSOR

John M. Hirsch, and Robert G. Stapleton, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 23, 1978, Ser. No. 936,153
Int. Cl.² G01N *29/02*
U.S. Cl. 73—290 V **6 Claims**



1. An ultrasonic apparatus for identifying the fluid in a vessel comprising:

a pair of transducers mounted to transmit ultrasonic energy through said fluid and receive the ultrasonic energy after it has passed through the fluid;

amplifier means, said transducers being coupled in series in the feedback circuit of said amplifier means, said amplifier means including adjustable elements for adjusting the impedence of the amplifier means to cause it to resonate; and,

a measuring circit, said measuring circuit including means for producing a repeatable ramp voltage and measuring the time required to cause an amplifier circuit to resonate using said preset ramp voltage to adjust the impedence of the amplifier.

4,212,202

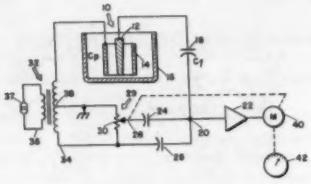
DISTRIBUTED COMPENSATION FOR CAPACITANCE-TYPE FLUID MEASURING APPARATUS

Charles C. Schmidt, Bettendorf, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 944,114, Sep. 20, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 64,946
Int. Cl.² G01F *23/26*
U.S. Cl. 73—304 C **10 Claims**

1. Capacitance fluid measuring means for measuring the mass of a dielectric fluid in a container wherein the mass of fluid in the container is related to the dielectric k, of said fluid

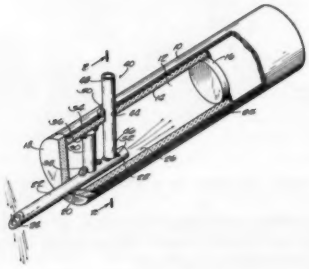
and to the level of the fluid in the container through a mathematical expression of the form of said container, f(V), and wherein



$$f(V) = \frac{aV}{a + b(k_o - 1)(1 - V)}$$

where a and b are constants relating to the fluid, k_o is the relative nominal dielectric constant of the fluid and V is the normalized volume of fluid in the container at a given fluid level, said fluid measuring means including a capacitor probe having electrodes contoured in accordance with f(V).

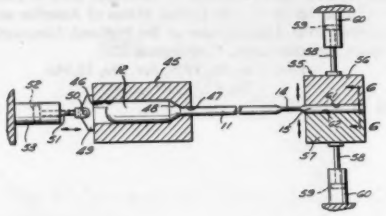
4,212,203
MOLTEN METAL STREAM SAMPLER WITH FILL GAUGE
Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186
Filed Apr. 19, 1979, Ser. No. 31,569
Int. Cl.[2] G01N *1/12*
U.S. Cl. 73—425.4 R **3 Claims**



1. A molten metal stream sampler including a refractory cylindrical wall defining a mold cavity, a fill tube extending into said cavity, and means for securing said fill tube along the inside surface of said cylindrical wall, said means including a strut extending at right angles with the longitudinal fill tube axis and wedged between said fill tube and the opposite refractory wall in spanning relation across said mold cavity, and refractory cement at the ends of said strut and said fill tube securing the strut and said fill tube on said refractory cylindrical wall.

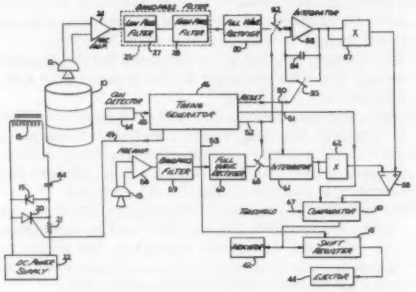
4,212,204
PIPETTE AND METHOD OF MAKING SAME
Elmer F. St. Amand, 12744 Kahlenberg La., N. Hollywood, Calif. 91607
Filed Apr. 26, 1979, Ser. No. 33,699
Int. Cl.[2] B01L *3/02*; B29C *25/00*
U.S. Cl. 73—425.6 **20 Claims**

1. A pipette for the dispensing of liquids comprising:
a hollow bulb and hollow stem connected thereto and constructed of a stretchable plastic material;
said stem comprising a stretched section having an inside diameter in the approximate range of 0.013 to 0.131 inch and a wall thickness in the approximate range of 0.0045 to



0.015 inch, the thickness also being small enough to provide an inside passage in said stretched section.

4,212,205
CONTAINER DEFECT DETECTION APPARATUS
Perry C. West, Saratoga, and Robert R. Buss, Palo Alto, both of Calif., assignors to Reticon Corporation, Sunnyvale, Calif.
Filed Feb. 12, 1979, Ser. No. 11,497
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—579 **13 Claims**



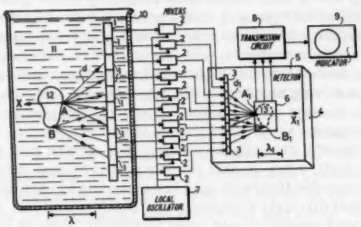
1. An apparatus for detecting defects in an open container comprising:
striking means for imparting energy to said container to cause it to vibrate at its natural frequencies;
first sensing means disposed adjacent to said container for sensing said vibrations of said container;
a first filter for selecting predetermined frequencies associated with a defective one of said containers, coupled to said sensing means;
comparator means for examining said predetermined frequencies associated with a defective one of said containers, coupled to said filter;
second sensing means spaced-apart from said container to sense background noise;
a second filter for selecting said predetermined frequencies associated with a defective one of said containers, coupled to said second sensing means; and,
cancellation means for cancelling the effects of one signal on a second signal, said cancellation means coupled between said filters and said comparator means so as to minimize the effects of said background noise from the signal applied to said comparator means
whereby defects in an empty or substantially empty container are detected.

4,212,206

ULTRASONIC SYSTEM FOR THE VISUAL DISPLAY OF A THIN SECTION OF A BODY

Pierre Hartemann, and Roger Torguet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 10, 1978, Ser. No. 950,144
Claims priority, application France, Oct. 7, 1977, 77 30245
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—606 17 Claims



1. System for visually displaying the image of a thin section of a body by ultrasonics, said system comprising: an ultrasonic generator, a scanning probe and means for visual display of said image; said system further comprising a frequency-converter ultrasonic lens made up of a first array of N bulk wave electromechanical transducers forming said scanning probe, a group of N frequency conversion circuits connected to a common local oscillator and a second array of N surface-wave electromechanical transducers arranged on a substrate; said first and second arrays of transducers having their corresponding transducers interconnected two-by-two by said frequency conversion electrical circuits so as to constitute a transmission link having N channels in which N electrical signals circulate; the frequency of said bulk waves being equal to the difference between the frequency of said surface waves and that of the signal produced by said local oscillator; the surface of the substrate carrying said second array of N transducers being equipped with at least one third array of surface-wave electromechanical transducers which, imaged by said frequency converter ultrasonic lens, carries out discrete scanning of the section through focussing the ultrasonic energy exchanged between said ultrasonic generator and said visual display means.

4,212,207

ULTRASONIC TUBE INSPECTION

Joseph J. Conradi, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 14, 1978, Ser. No. 969,743
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—623 17 Claims

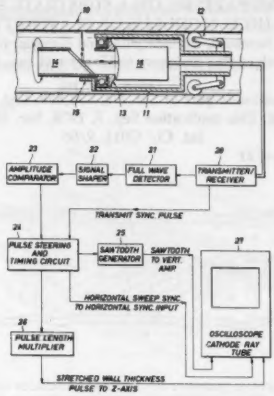
1. An improved ultrasonic apparatus of the pulse echo type for inspecting tubular members where the apparatus includes means for directing a pulse of ultrasonic energy through the wall of the tubular member, said improvement comprising:

means for producing a plurality of pulses spaced circumferentially around the tubular member;

first circuit means disposed to detect the reflection of said ultrasonic energy from the inner and outer walls of the tubular member,

a cathode ray tube, the horizontal sweep of said tube being triggered by the production of said pulses of ultrasonic energy and the beam intensity being turned on by the detection of the reflection from the inner wall and turned off by the detection of the reflection from the outer wall; and

means for triggering a separate horizontal sweep of the cathode ray tube for each pulse of ultrasonic energy, each separate sweep being vertically spaced from the preceding



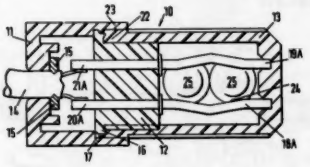
sweep such that a rectilinear picture of the circumferential cross section of the tube wall is produced.

4,212,208

VIBRATION DETECTOR INCORPORATING TWO OR MORE SEISMIC ELEMENTS

John L. Weale, Camberley, and Stephen P. Wiles, Basingstoke, both of England, assignors to Inertia Switch Limited, Hampshire, England

Filed Jul. 24, 1978, Ser. No. 927,568
Claims priority, application United Kingdom, Jul. 22, 1977, 30975/77
Int. Cl.[2] G01V *1/16*
U.S. Cl. 73—652 10 Claims



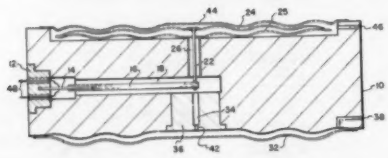
1. A vibration responsive detector comprising at least one pair of parallel, electrically conductive rods, at least two seismic elements, having electrically conductive outer surfaces, mounted on the rods of said one pair so as to provide parallel electrical connections between these two rods, characterised in that positioning means (24, 33) are provided for urging each seismic element (25) into contact with an adjacent seismic element (25) so as to ensure electrical connection between adjacent elements (25) irrespective of relative movement of adjacent elements (25) transversely of the rods (18, 19).

4,212,209

DIFFERENTIAL PRESSURE TO ELECTRIC CURRENT TRANSDUCER EMPLOYING A STRAIN SENSITIVE RESISTIVE PATTERN ON A SUBSTRATE HAVING A HIGH MODULUS OF ELASTICITY

William F. Newbold, Philadelphia, and Gurnam Singh, Willow Grove, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 838,538, Oct. 3, 1977, abandoned. This application Sep. 7, 1978, Ser. No. 940,333
Int. Cl.[3] G01L 9/06
U.S. Cl. 73—721 5 Claims



1. A differential pressure to current transducer comprising in combination:

a transducer housing;

a strain sensitive element including a resistive pattern on a slab which has high modulus of elasticity;

a header secured in said housing;

a rigid beam extender embedded in and secured to one end of said slab, said beam extender at least eight times as long as said slab;

the other end of said slab embedded in and secured to said header with said beam extender and slab in combination forming an extended cantilever beam;

a pair of diaphragms secured to said housing, at least one of said diaphragms being a capsule;

a fluid passage in said housing coupling a pressure exerted on one diaphragm to the other diaphragm; and

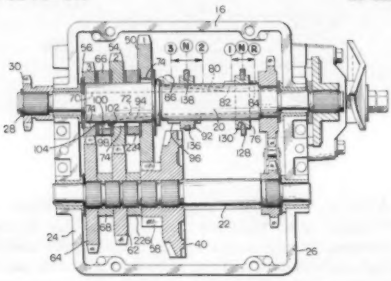
means coupling an interior wall of said capsule to said rigid beam extender, whereby movement of the wall causes movement of said beam extender and a change in the resistive values of said resistive pattern.

4,212,210

MULTI-SPEED TRANSMISSION WITH H-PATTERN SHIFT

Roland L. von Kaler, Tecumseh, and Norman E. Jolliff, Tipton, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Feb. 3, 1978, Ser. No. 875,117
Int. Cl.[2] F16H 3/08; G05G 9/14, 5/10
U.S. Cl. 74—375 10 Claims



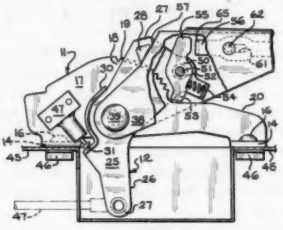
1. In a multi-speed transmission including a housing, an output shaft journalled in said housing, an intermediate shaft journalled in said housing in spaced, parallel relationship with said output shaft, an input shaft journalled in said housing and drivingly connected to said intermediate shaft, a reverse gear rotatably mounted on said output shaft, a gear on said intermediate shaft drivingly connected to said reverse gear, a group of at least first, second and third forward gears rotatably mounted on said output shaft, said reverse gear and each gear of said group having a plurality of radially spaced, axially extending notches formed therein, said group being axially spaced from said reverse gear, at least three gears mounted on said intermediate shaft for rotation therewith and respectively drivingly connected to the gears of said group, at least one axially extending slot in said output shaft extending under at least the first gear of said group, a collar mounted on said output shaft intermediate said reverse gear and said gear group, said collar being axially movable on said output shaft in either direction from a neutral position to first and second positions, respectively, a driving member axially movable with said collar, said driving member extending toward said reverse gear and drivingly engaging a said notch therein in said first position of said collar thereby drivingly to connect said reverse gear to said output shaft, a key in said slot connected to said collar and axially movable therewith, said key extending toward said gear group and drivingly engaging a said notch in said first gear in said second position of said collar thereby drivingly to connect said first gear to said output shaft, and a manual gear-shift lever mounted on said housing and operatively connected to said collar for selectively moving the same to said positions thereof, the improvement comprising: a second collar mounted on said output shaft intermediate said first-named collar and gear group, said second collar being axially movable on said output shaft in either direction from a neutral position to first and second positions, respectively, said second collar surrounding said first-named key; a second axially extending slot in said output shaft extending under the gears of said group, a second key in said second slot and axially movable therewith, said second and third gears being axially spaced, said second key having a driving portion thereon which extends into the space between said second and third gears in said neutral position of said second collar, said driving portion drivingly engaging a said notch in said second gear in said first position of said second collar and drivingly engaging a said notch in said third gear in said second position of said second collar thereby drivingly to connect said second and third gears, respectively, to said output shaft; said shift lever being operatively connected to said second collar for selectively moving the same to said positions thereof.

4,212,211

PARKING BRAKE LEVER ASSEMBLY

William Rickert, LaSalle, Mich., assignor to Donovan Wire & Iron Company, Toledo, Ohio

Filed Jul. 17, 1978, Ser. No. 925,453
Int. Cl.[2] G05G 5/18
U.S. Cl. 74—538 4 Claims



1. A hand-actuated parking brake lever assembly for mechanical linkage to and operation of a remote brake, said assembly comprising:

a ratchet plate having a sector of teeth and means for securing said plate from movement;

a lever mechanism including a brake-operating lever and a releasable brake lock, said brake-operating lever being pivotally mounted to said ratchet plate and having both a stop member and a means for mechanical linkage to such remote brake whereby such remote brake is applied when said lever is pivoted in an operating direction, and said releasable brake lock comprising a pawl pivotally mounted to said lever mechanism and adjacent said sector of teeth and means supported by said lever mechanism for biasing said pawl into engagement with said sector of teeth when said lever is pivoted in an operating direction whereby said pawl maintains the braking force until disengaged;

a handle pivotally mounted to said ratchet plate and including a drive member adapted to abut and drive said stop member when said handle is pivoted in an operating direction thereby simultaneously pivoting said lever and selectively engaging said pawl with said sector of teeth, said handle being returnable to a non-operating position without disengaging said pawl from said sector of teeth; and

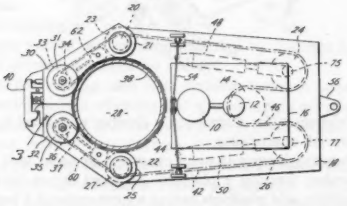
means for disengaging said pawl from said sector of teeth thereby releasing said brake lock.

4,212,212

ROTARY DRIVE APPARATUS

Arthur R. Chandler, and Victor Moody, both of Lowestoft, England, assignors to Weatherford/Lamb, Inc., Houston, Tex.

Filed Oct. 6, 1978, Ser. No. 949,320
Int. Cl.[2] B25B *17/00*
U.S. Cl. 81—57.17 **2 Claims**



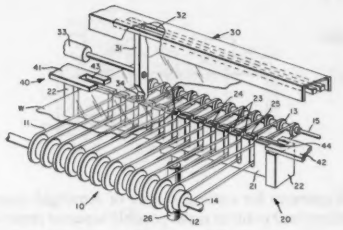
1. In a rotary drive apparatus for applying rotational torque to a cylindrical member of the type having a body structure including a recess to receive the cylindrical member, a plurality of wheels mounted to said body structure, an endless loop trained round said wheels and disposed so that it contacts the outer surface of the cylindrical member when the cylindrical member is positioned in the recess, a drive means mounted to the body structure for driving the endless loop, two jaws for closing off the recess during operation, at least one of said jaws rotatably mounted to the body structure, one of said wheels rotatably mounted on the front of each jaw, each of said front mounted wheels having freely rotating flanges disposed so that they contact and support the outer surface of the cylindrical member during operation and the outer periphery of said flanges rotates at the same speed as the outer periphery of said member, the improvement which comprises two reaction rollers engaging said cylindrical member when the member is positioned in the recess, each jaw having one reaction roller mounted thereon, said reaction rollers disposed so that both of the wheels with freely rotating flanges are positioned between the reaction rollers and so that the reaction rollers contact the cylindrical member thereby reducing the effects of toppling of the cylindrical member should toppling occur.

4,212,213

WEB SEVERING DEVICE AND PROCESS FOR SEVERING A WEB

Robert O. Wolfelsperger, Fairfield, and William R. Pasco, Brick Town, both of N.J., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 10, 1978, Ser. No. 950,241
Int. Cl.[2] B26D *7/02*
U.S. Cl. 83—56 **5 Claims**



1. A web severing device comprising web transporting means,

web lifting means located to move a web to be severed apart and away from the web transporting means,

web cutting means to sever the web without damage to the web transporting means, and

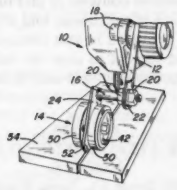
web clamping means mounted to interfere with and contact an end of the lifting edge in the lifting mode, said web transporting means having a planar web transport surface, and said web lifting means having a lifting edge which, in a normal mode, is located below the web transport surface and, in a lifting mode, is located above the web transport surface.

4,212,214

ANTI-KICKBACK DEVICE

Jacob R. Bippus, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,256
Int. Cl.[3] B27G *19/02, 19/08*
U.S. Cl. 83—102.1 **5 Claims**

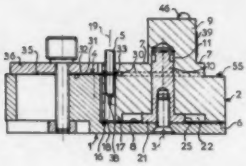


1. An anti-kickback device for use with stationary saws having a work table and a saw associated with said work table, said anti-kickback device comprising, a holder, mounting means on said holder, a rotatable wheel assembly on said mounting means allowing rotation in one direction only and having a member adapted to contact the surface of a workpiece, said mounting means including a pivotal connection between said mounting means and said holder, and a slot in said holder for permitting limited rotation of said mounting means about said pivotal connection, whereby gripping force on said workpiece is increased when said wheel assembly has a force applied opposite to said one direction.

4,212,215
APPARATUS FOR CUTTING A TUBE OF SEMI-RIGID MATERIAL

Bruno Buys, La Madeleine, France, assignor to Astec, France

Filed Jul. 3, 1978, Ser. No. 921,179
Claims priority, application France, Jul. 6, 1977, 77 21393
Int. Cl.[2] B26D 3/16
U.S. Cl. 83—109 13 Claims



1. Apparatus for cutting a tube of semirigid material at a pre-determined point to make possible separate removal of first and second contents of the tube on opposite sides of the cutting point, and comprising:

a flat blade provided with a cutting edge and a flat portion, the dimensions of the latter being at least equal to the cross-sectional dimensions of a tube to be cut at the desired cutting point;

jaws which together define a longitudinal channel with a transverse profile complementary to that of the tube to be cut so that they can receive the latter inside them, the said jaws also defining in an area adjacent to the channel, a slot running transversely in relation to the general direction of the channel and intersecting the latter transversely across and through the whole of its transverse periphery at a level corresponding with the level at which it is desired to cut a tube when fixed in the channel;

means for clenching the jaws around a tube so as to grip it over the greater part of its periphery, at least in zones situated in the immediate proximity of the slot and on both sides of the latter; means for relatively moving the blade and the jaws whereby the blade enters the slot and its cutting edge passes transversely through the channel to cut a tube therein until the flat part of the blade completely covers the cross-section of the channel at the point of the slot, and seals off the two parts of the tube after cutting each other and;

means for axially adjusting the position of said tube within said channel to bring the position of an interface between said first and second contents of said tube into coincidence with the position of said blade, said adjusting means comprising a stop provided in said channel between said slot and a first end thereof to abut the tubes, and means for adjusting the position of said stop in said channel.

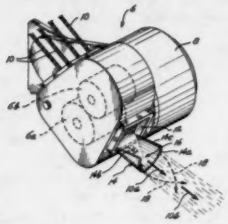
4,212,216
DEFLECTOR FOR ATTACHMENT TO FIBER CHOPPER NOZZLE

Frank E. Ives, 26601 Dover Ct., Kent, Wash. 98031

Filed Jan. 22, 1979, Ser. No. 5,305
Int. Cl.[2] B65B 39/00; B26D 7/06
U.S. Cl. 83—165 5 Claims

1. In a fiber chopper including a body having a nozzle opening, and including means associated with said body for chopping a fiber strand into fiber segments and causing said fiber segments to be ejected from said nozzle along a primary flow path, said nozzle opening having a lower edge portion, an upper edge portion, and sides, an immprovement associated with said nozzle comprising:

means defining a forwardly extending, upwardly opening trough having its longitudinal dimension oriented generally parallel to said primary flow path for receiving fiber segments ejected from said nozzle and causing said fiber segments ejected from the corner portions of said nozzle

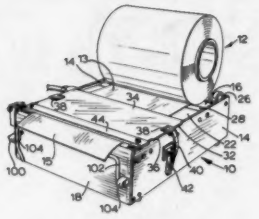


to be skewed upwardly and inwardly relative to said primary flow path.

4,212,217
WEB DISPENSER

John B. Heppner, Toronto, Canada, assignor to C. A. Pemberton & Co., Toronto, Canada

Filed Sep. 18, 1978, Ser. No. 943,522
Claims priority, application Canada, Nov. 14, 1977, 290705
Int. Cl.[2] B26D 5/20
U.S. Cl. 83—277 6 Claims



1. A dispenser for dispensing a flexible web from a roll of web material, comprising;

(a) a housing having an inner chamber, an upper wall of said chamber forming a platform disposed above said inner chamber, said platform having a front end and a back end,

(b) unwinding support means on said housing at said back end of said platform for supporting a roll of web material in a position to permit unwinding thereof in the direction of its longitudinal extent along said platform,

(c) cutter means on said housing at said front end of said platform, said cutter means being adapted to cut the web transversely of its longitudinal extent to any required length,

(d) a guide plate releasably mounted above said platform in a spaced relationship therewith to provide a narrow guideway therebetween for receiving the web and limiting the extent to which it can be raised above said platform,

(e) passage means extending longitudinally of said platform and opening between said guideway and said inner chamber,

(f) quick release means releasably retaining said guide plate with respect to said housing whereby said guide plate can be removed to facilitate feeding of said web along said guideway,

(g) web feeder means mounted in said inner chamber and enclosed by said housing, said feeder means including finger means adapted to move into said guideway by way of said passage means to engage a web which is restrained by said guide plate as aforesaid and out of said guideway to release said web,

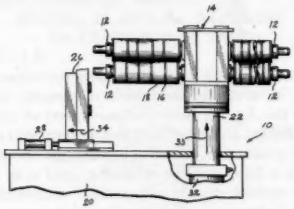
(h) feeder drive means located in said inner chamber for driving said web feeder means into and out of said guideway and longitudinally of said platform to feed a web of material along said platform to project outwardly from said cutter means.

4,212,218

SLITTER HAVING LIFTABLE PIVOTED MULTIPLE SPACED PAIRS OF ARBORS

Harold R. Braner, River Grove, and Douglas S. Matsunaga, Vernon Hills, both of Ill., assignors to Braner Enterprises, Inc., Schiller Park, Ill.

Filed Aug. 28, 1978, Ser. No. 937,450
Int. Cl.[2] B23D *19/06*; B26D *1/24*
U.S. Cl. 83—479 **7 Claims**



1. A slitter for cutting sheet material extending along a pass line into strips comprising

a frame,

a first housing,

multiple spaced pairs of arbors carried by said first housing and extending outwardly thereof,

means for shifting said first housing between upper and lower positions whereby said spaced arbors are raised out of and lowered into the plane of said material pass line as a unit relative to said frame,

means pivotally connecting said first housing to said frame for rotative movement about a generally vertical axis when said first housing is in its upper position whereby a selected one of said pairs of arbors may be vertically aligned with said material pass line for movement into the pass line when said first housing is shifted into its lower position, and

a second housing for supporting said selected one pair of arbors when positioned in said material pass line.

4,212,219

HARMONICA STAND

Dana L. Hubbard, 11 Leafwood Circle, San Rafael, Calif. 94901

Filed Jul. 6, 1979, Ser. No. 55,288
Int. Cl.[2] G10D *7/12*
U.S. Cl. 84—1.06 **5 Claims**

1. The harmonica holder comprising:

means comprising a rigid upright pole adapted to be supported on a horizontal surface;

a harmonica support seat mounted on the end of said pole;

a spring-biased pressure bar adapted to clamp a harmonica in place on said support seat;

a first microphone holder;

means for releaseably securing said first microphone holder in a selected position along said pole; and

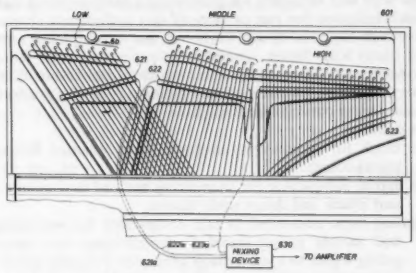
a wind shield interposed between said harmonica support and said first microphone holder.

4,212,220

MAGNETIC SENSOR FOR A MUSICAL INSTRUMENT AND METHOD OF CONSTRUCTING SAME

Charles T. Helpinstill, II, 6124 Jessamine, Houston, Tex. 77036

Continuation of Ser. No. 621,365, Oct. 10, 1975, abandoned.
This application Oct. 21, 1977, Ser. No. 844,333
Int. Cl.[2] G10H *3/00*; H01F *27/02*
U.S. Cl. 84—1.14 **15 Claims**



1. A magnetic sensor for a musical instrument having vibrating magnetic elements to produce musical notes, which magnetic sensor is suitable for attachment to the frame of the instrument and which magnetic sensor produces an electronic signal in response to the vibration of any of the vibrating magnetic elements, comprising;

a flexible, electrostatically shielded, coil-magnet comprising:

a flexible bar magnet of predetermined length, width and thickness, the bar magnet having two major surfaces defined by the length and width of the bar magnet and having side surfaces, wherein the poles of the magnet are the major surfaces and wherein a uniform magnetic flux density exists across the thickness of the bar between the poles of the bar magnet;

a coil comprising a predetermined number of windings of a conductor which are wound around the side surfaces of the bar magnet; and

electrostatic shielding material which is adhesively bound to the major surfaces of said bar magnet and which

encompasses and encloses said bar magnet and windings;

a two-wire cable connected to the ends of the coil of said coil-magnet; and

flexible, non-conductive material encompassing said coil-magnet and the connection of the two-wire cable to the coil of the coil-magnet.

4,212,221

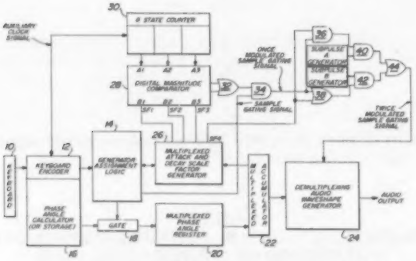
METHOD AND APPARATUS FOR NOTE ATTACK AND DECAY IN AN ELECTRONIC MUSICAL INSTRUMENT

Robert P. Woron, Allentown, Pa., assignor to Allen Organ Company, Macungie, Pa.

Continuation-in-part of Ser. No. 787,695, Apr. 14, 1977, abandoned. This application Mar. 30, 1978, Ser. No. 891,874

Int. Cl.[2] G10H *1/02, 5/00*

U.S. Cl. 84—1.26 **5 Claims**



1. In an electronic musical instrument having plural multiplexed waveshape generator channels, a keyboard, a demultiplexing audio waveshape generator for generating an audio signal derived from said plural multiplexed waveshape generator channels, generator assignment logic operatively associated with said keyboard for generating a sample gating signal which indicates that one or more of said multiplexed channels have been captured by said keyboard, and a multiplexed attack and decay scale factor generator for generating scale factors for each multiplexed channel to produce a desired attack and decay envelope for each of said audio waveshape generator channels, the combination comprising:

a counter,

a clock for repetitively advancing said counter through plural counts,

a digital comparator for comparing each of said counts to said attack and decay scale factors,

gating logic connected to said comparator for modulating said sample gating signal by transmitting said sample gating signal to a waveshape generator if a scale factor is greater than or equal to said count and by blocking said sample gating signal otherwise.

4,212,222

VIOLIN SHOULDER REST

Ted Henkle, 5415 Reynolds Street, Savannah, Ga. 31405

Filed Dec. 21, 1978, Ser. No. 971,964

Int. Cl.[2] G10G *5/00;* **G10D** *3/18*

U.S. Cl. 84—278 **5 Claims**

1. A shoulder rest for an instrument having a chin rest and a supporting clamp engaging a back portion of the instrument generally opposite the chin rest, comprising:

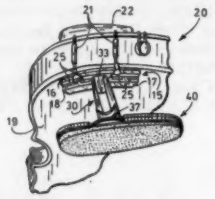
an elongated mounting base securable between said supporting clamp and said back portion of the instrument;

an arm having a longitudinal slot formed therein;

means for detachably securing said arm to said base at different locations along the length of said base;

a shoulder rest element having a top surface and a bottom surface and a bore extending through said surfaces thereof; and

means for coupling said shoulder rest element to said arm which permits sliding, rotational and tilting movement of said rest element relative to said arm and which permits the rest element to be fixed in a desired and stationary position relative to said arm, said means for coupling including a threaded bolt, one end of which extends through said bore of said shoulder rest element and the other end of which extends through said slot and is slidably coupled to said arm for sliding movement along said slot thereof, and a nut threadably secured on said one end of said bolt opposite said lower surface of said shoulder rest element, said nut being movable between a non-locking position in which it permits sliding movement of said bolt and, in turn, said shoulder rest element, along the length of the slot and rotational movement of said shoulder rest element about said bolt and, in turn, said arm, and a locking position, in which it secures the shoulder rest element in a fixed position relative to said arm, said nut having a control disc in engagement therewith which facilitates tightening and loosening of the nut so as to permit the sliding, rotational and tilting movement adjustments of the position of said shoulder rest element relative to said arm to be controlled exclusively by said control disc.



4,212,223

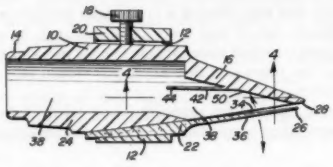
MOUTHPIECE FOR WOODWIND MUSICAL INSTRUMENTS

Clinton A. Runyon, P.O. Box 1018, Opelousas, La. 70570

Filed Oct. 27, 1978, Ser. No. 955,172

Int. Cl.[2] G10D *9/02*

U.S. Cl. 84—383 R **4 Claims**



1. In a mouthpiece for clarinet or saxophone wherein the mouthpiece comprises a hollow mouthpiece frame and a primary reed, the frame including an inclined wall opposed to the primary reed defining an interior elongated tone chamber having a longitudinal extent and an end for attachment to a length of tubular instrument body and having a chink opening between said primary reed and said mouthpiece for blowing of air therethrough to produce a musical tone, the improvement comprising a secondary reed mounted within said tone chamber for vibrating sympathetically to modify the tone so produced, the secondary reed being disposed substantially parallel to said longitudinal extent and being integral with said mouthpiece frame, said primary and secondary reeds having generally flat surfaces in substantially parallel relation to each other, said secondary reed having a mounting portion and a sympathetically vibrating portion, the mounting portion being se-

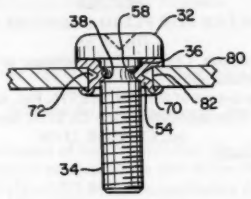
cured to the inside surface of the inclined wall and the vibrating portion being directed substantially parallel to said longitudinal extent, said secondary reed being bendable along said vibrating portion near said mounting portion to permit bending closer to said primary reed about a transverse line generally parallel to the inner surface of the primary reed to produce a louder and brighter tone and bendable along said vibrating portion about the same transverse line near said mounting portion to permit bending away from said primary reed to produce a darker sound, whereby the vibratable primary reed creates an oscillatory motion of air within said tone chamber, which oscillatory motion of air sets the secondary reed into sympathetic vibration and causes the tone produced by the instrument to be modified.

4,212,224

JACKING SCREW TYPE FASTENER

Robert C. Bragg, Jr., Amesbury, and John T. Hawley, North Chelmsford, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Sep. 25, 1978, Ser. No. 945,169
Int. Cl.[2] F16B *35/00, 39/00*
U.S. Cl. 85—1 K **1 Claim**



1. The combination of a threaded fastener having a head portion and a shank portion and a collar adapted to be secured to said fastener around said shank portion adjacent said head portion, however, permitting relative rotary motion of said fastener with respect to said collar while preventing relative axial motion therebetween, wherein the improvement comprises:

said shank portion having a shoulder portion disposed adjacent said head portion said shoulder portion extending lengthwise of said shank for a predetermined extent;

said threaded fastener shank portion being provided with an annular groove adjacent said shoulder portion, said groove having a width substantially equal or exceeding its depth and having a cross-section with a generally arcuate perimeter;

said collar having an enlarged bearing portion adapted to cooperate with the head portion of said fastener and a cylindrical sleeve portion extending longitudinally of said bearing portion said sleeve portion having a diameter of sufficient dimension so as to rotatably receive the shank portion of said fastener therein;

said collar sleeve portion being further provided with an annular groove adjacent said bearing portion, said groove having a width substantially equal to or greater than its depth and having a cross-section with a generally arcuate perimeter, however, said width of said groove being less than the thickness of the mounting device into which said combined fastener is installed, the material of said sleeve proximate said groove being compressible into said groove in said shank portion;

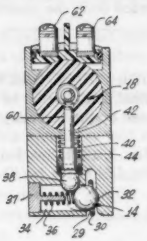
said collar sleeve portion being further provided at its end opposite said bearing portion with a flange extending generally longitudinally of said sleeve and adapted to be swagged against said mounting device to secure said fastener therein.

4,212,225

MUNITION ARMING DEVICE

Curtis V. Correll, Sr., 1900 Bonita Dr., Glendale, Calif. 91208, and William F. West, 12077 Kalua Dr., Sunland, Calif. 91040

Filed Sep. 15, 1978, Ser. No. 942,871
Int. Cl.[2] F41F *5/02*; B64D *1/04*
U.S. Cl. 89—1.5 D **25 Claims**



23. An arming device for selectively allowing a munition to be discharged in a safe condition or an armed condition comprising:

a locking member;

solenoid means for preventing movement of said locking member upon energization thereof to permit a munition to be discharged in an armed condition;

a wire engaging member;

an intermediate member disposed between said wire engaging member and said locking member; and

a housing in which said wire engaging member is confined for substantially horizontal movement and said intermediate member is confined for substantially vertical movement;

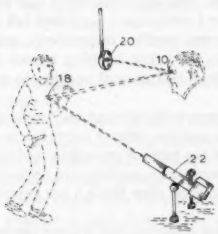
said wire engaging member and said intermediate member having mutually engaging curved surfaces.

4,212,226

DEVICE AND METHOD OF ILLUMINATING A TARGET BY THE EYE-MOTION OF AN OPERATOR

Erwin S. Teltscher, 69, Diana's Trail, Roslyn, N.Y. 11576

Filed Jun. 21, 1978, Ser. No. 917,733
Int. Cl.[2] F41G *3/02*
U.S. Cl. 89—41 L **9 Claims**



4. In a method of illuminating a target by the eye motion of an operator with the aid of a lens, said lens comprising means for focusing light rays impinging on the lens from a light source, and reflected from the lens, substantially onto a predetermined region by an eye movement of a wearer of the lens, the lens having an inner transparent region adapted to substantially fit over the pupil of the eye, and an outer region surrounding said inner region, said outer region having an outer surface defining a plurality of recesses, a corresponding portion of the surface of the outer region of said lens defining each of said recesses having a light-reflecting property, and being

shaped so as to focus the lens-reflected light onto said predetermined region,

the steps comprising:

fitting at least one eye of the operator with said lens, arranging the light source in the vicinity of the operator, and

moving the eye-fitted lens so as to focus the light rays reflected from the lens onto said predetermined region, whereby a portion of the light rays reflected from the lens are, in turn, reflected from the predetermined region.

4,212,227

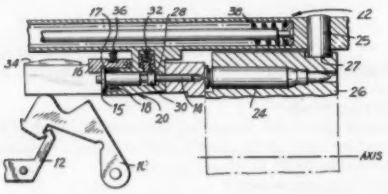
DUAL-MODE FIRING MECHANISM

Paul E. Stewart, Deerfield, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 2, 1979, Ser. No. 621

Int. Cl.³ F41D *11/10*

U.S. Cl. 89—129 B **7 Claims**



1. A mechanism for firing cartridges in a burst from a battery position of a rifle comprising:

operating rod means slidably mounted in said rifle for assuming three positions—a first full forward (cocked and firing) position, a second (short stroke rearward) position, and a third (long stroke or reload) position;

means for normally urging said operating rod means to said first full forward position;

a firing pin carrier mounted on said rod;

a firing pin slidably mounted in said carrier between a normal position and a firing position;

firing pin spring means normally urging said firing pin towards said normal position;

first firing pin latching means for securing said firing pin when in a normal position;

second firing pin latching means for securing said firing pin when in said firing position;

hammer means, operable when both said firing pin and said operating rod means are in said first full forward position and said normal position respectively, and when operated for releasing said first latching means and driving said firing pin from said normal position to said second firing position;

means for momentarily moving said operating rod means to said second position after a cartridge is fired and a next cartridge of the burst is moved to said battery position;

means for momentarily moving said operating rod means to said third position after firing a last cartridge in the burst; and

ramp means for releasing said second latching means when said rod means is moved to said third position.

4,212,228

POWER PLANT

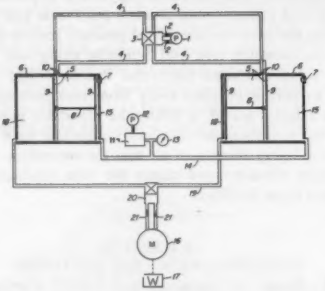
Floyd L. Heaton, Mountain City, Tenn., assignor to Fluid Engineering Co., Johnson City, Tenn.

Filed Nov. 8, 1978, Ser. No. 958,793

Int. Cl.³ F01B *7/00*

U.S. Cl. 91—170 **9 Claims**

1. A power plant comprising two double-ended cylinders each containing double-ended pistons therewithin; a common high-pressure pneumatic force applied to one piston chamber of each cylinder; means to cyclicly reciprocate the pistons; and



hydraulic means to transmit the force generated in a second piston chamber of each cylinder to a hydraulic motor.

4,212,229

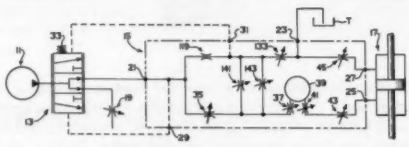
CONTROLLER FOR FLUID PRESSURE OPERATED DEVICES

Oliver W. Johnson, Chaska, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 875,714, Feb. 6, 1978, Pat. No. 4,167,893. This application Oct. 25, 1978, Ser. No. 954,519

Int. Cl.² F15B *13/04*

U.S. Cl. 91—446 **15 Claims**



1. A controller operable to control the flow of fluid from a source of pressurized fluid to a fluid pressure operated device, the source of fluid including pressure responsive means for varying the delivery of fluid to said controller, said controller comprising:

(a) housing means including an inlet port for connection to the source of fluid, a return port for connection to a reservoir, first and second control fluid ports for connection to the fluid pressure operated device, and a load signal port for connection to the pressure responsive means;

(b) valve means disposed in said housing means including a primary rotatable valve member and a cooperating relatively rotatable follow-up valve member, said valve members defining a neutral position and a central reference plane disposed perpendicular to the axes of rotation of said valve members;

(c) means for imparting follow-up movement to said follow-up valve member in response to the flow of fluid to or from the fluid pressure operated device;

(d) means coupling said follow-up valve member to said primary valve member for limited movement relative to said neutral position and for common rotary movement therewith;

(e) said primary and follow-up valve members cooperating with said housing means to define a first plurality of fluid passages connecting said inlet port and said first control fluid port when said valve members are relatively displaced in one direction from said neutral position and a second plurality of fluid passages connecting said inlet port and said second control fluid port when said valve

members are relatively displaced in the other direction from said neutral position, said first and second pluralities of fluid passages being arranged to provide substantially the same restriction to fluid flow between said inlet port and said control fluid ports in either direction of relative displacement from said neutral position;

(f) said first and second pluralities of fluid passages including first and second main flow control orifices, respectively, each of said orifices having a substantially zero flow area when said valve members are in said neutral position and an increasing flow area as said valve members are displaced from said neutral position;

(g) said valve means and said housing means cooperating to define a load signal chamber in continuous fluid communication with said load signal port;

(h) means operable to communicate fluid pressure from upstream of said first and second main flow control orifices to said load signal chamber; and

(i) said valve means including means to variably restrict the flow of fluid from said load signal chamber to said first plurality of fluid passages, downstream of said first main flow control orifice, when said valve members are relatively displaced in said one direction, and to said second plurality of fluid passages, downstream of said second main flow control orifice, when said valve members are relatively displaced in said other direction.

4,212,230

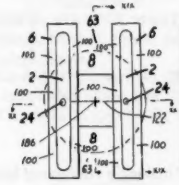
SLIDE FACES OF PISTON SHOES IN RADIAL PISTON MACHINES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 537,352, Jan. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 477,085, Jun. 6, 1974, Pat. No. 3,951,047. This application Aug. 5, 1977, Ser. No. 822,161

Int. Cl.[2] F01B *13/06*

U.S. Cl. 92—58 **8 Claims**



1. A radial piston machine comprising;

a central axis defining body able to revolve around said central axis and having a plurality of pistons reciprocable in radially open cylinders; a piston stroke actuating body radially of said central body and having an annular guide face turned toward said central body; each one piston radially reciprocal in each of said cylinders and having an outer end turned toward said guide face;

said outer ends forming bearing beds for the pivotable reception of a pivot portion of a respective piston shoe; each one piston shoe associated with each one of said pistons having a pivot portion carried and borne on the said bearing bed of the respective piston;

said piston shoes having guide portions extending peripherally relatively to said actuating body in the direction of rotation of said central body and having contact faces riding on said guide face;

each of said piston shoes being formed with a pair of fluid pressure receiving and containing depressions and sealing lands around said depressions whereby said sealing lands and depressions form together hydrostatic bearings;

said central body and said actuating body having medial axis; said axes being distanced from each other and forming an eccentricity between said bodies; said actuating body having axial ends and said piston shoes having axial ends parallel to said ends of said actuating body; said contact faces moving relatively to said guide face in a direction of movement parallel to said ends due to the said eccentricity between said bodies when at least said central axis defining body revolves; said depressions of said hydrostatic bearings closed by said guide face and by said sealing lands;

at least one recess provided in said machine and extended to said contact faces of said piston shoes for the separation of one of said hydrostatic bearings of a respective piston shoe from the other of said hydrostatic bearings of the respective piston shoe;

said recess extending parallel to said ends of said actuating body and of said piston shoes;

said depressions of each pair of said depressions laterally distanced from each other, parallel to each other, located in said guide portions and distanced from the axis of the respective piston;

said depressions extending in said direction of movement of said contact faces and being narrower in the direction parallel to said axes; said sealing lands including parallel portions with parallel ends in said direction of movement;

and portions of said hydrostatic bearings being located radially of said pistons and of said pivot portions.

4,212,231

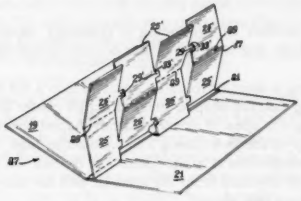
METHOD OF MAKING A PROMOTIONAL NOVELTY DEVICE

Ib Penick, Prospect Heights, and John K. Volkert, Northfield, both of Ill., assignors to Compak Systems Inc., Northfield, Ill.

Division of Ser. No. 746,340, Dec. 1, 1976, Pat. No. 4,146,988, which is a continuation-in-part of Ser. No. 638,558, Dec. 8, 1975, Pat. No. 3,995,388. This application Aug. 16, 1978, Ser. No. 934,202

Int. Cl.[2] G09F *1/00*

U.S. Cl. 93—1 F **10 Claims**



1. A method of making an item of the character described, which method comprises

providing a pair of base panels of sheet material,

providing a planar coupon-carrying panel which includes a plurality of side-by-side coupons which are disposed side-by-side in said panel being defined by slit means therebetween, and which panel also includes tab means corresponding in number to and individually associated with each of said coupons and further includes means interconnecting laterally adjacent pairs of said side-by-side coupons at locations spaced apart from said tab means, and

adhesively joining said coupon-carrying panel and said base panels generally along a straight line to form an adhesive joinder so that said base panels are hinged to each other and form a hinged connection with said coupon-carrying panel being disposed therebetween and with each tab means joined in surface contact to an opposite base panel from that to which the adjacent tab means is joined,

whereby opening of said hinged base panels causes said plurality of coupons to stand up from the respective planes

of said base panels with adjacent coupons disposed in planes lying at a substantial angle to each other.

6. A method of making an item of the character described, which method comprises

providing a pair of sheet material base panels which are hinged together along a straight line,

die-cutting an elongated piece of sheet material to form a plurality of coupons by cutting said piece with a plurality of transverse cuts that begin at one longitudinal edge and terminate short of the opposite longitudinal edge of said piece to leave interconnections between adjacent coupons, adjacent transverse cuts beginning at different longitudinal edges,

defining a pair of tabs at the opposite ends of said interconnected coupons by two lines of weakness, and

joining said pair of tabs in surface contact with different base panels, with said die-cut panel disposed between said pair of base panels and with said tab means located spaced from said straight line of said base panels,

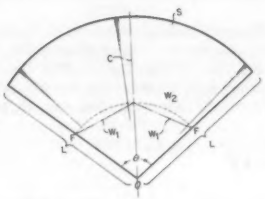
whereby opening of said hinged base panels causes said plurality of coupons to extend out of the respective planes of said base panels in a zig-zag configuration.

4,212,232

METHOD OF PRODUCING A FOLDABLE CONTAINER

Gee Y. Lee, 62, Kochok-Dong, Youngdeungpo-ku, Seoul, Rep. of Korea

Filed Nov. 28, 1978, Ser. No. 964,206
Int. Cl.[2] B31B 5/26
U.S. Cl. 93—49 M **2 Claims**



1. A method of producing a container capable of being folded flatly and having a planar bottom, comprising the steps of:

forming a sheet of foldable material into a fan shape,

folding said fan-shaped sheet along its center line,

folding the apex of the folded fan-shaped sheet against the body of the sheet along a line from the edge of the folded fan shaped-sheet to the center line thereof, located a preselected distance from the apex of said fan-shaped sheet,

unfolding said sheet,

marking an arc on said sheet having its center at the apex and having a radius equal to said preselected distance,

forming said sheet of foldable material into a truncated cone having the apex portion of said cone protruding into the interior of said truncated cone, and

folding said truncated cone substantially flat.

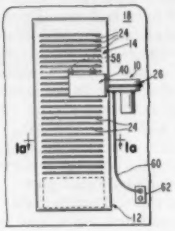
4,212,233

BLOWER UNIT FOR WALL HEATER HAVING SLOTTED FRONT PANEL

Robert H. Shaffer, 492 Sierra Vista Ave., Mountain View, Calif. 94043

Filed Jan. 6, 1978, Ser. No. 867,638
Int. Cl.[2] G03C 1/28
U.S. Cl. 98—108 **11 Claims**

1. A blower unit for use with a wall heater having a slotted upright panel covering one boundary of a wall heater space comprising: a blower having an air inlet, an air outlet, and means for generating a flow of air between the inlet and outlet; and means carried by the blower near the outlet thereof and insertable into a slot of the panel for mounting the blower on said panel externally thereof in a position with the outlet adjacent to and facing the panel and communicating with at least one of the slots to thereby permit air flowing out of the outlet



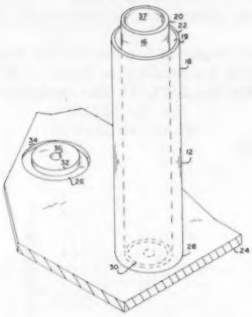
to enter said one of the slots of the panel and be directed into the wall heater space to cause air to be forced out of the space through the remaining slots.

4,212,234

BAKING MOLD ASSEMBLY

Charles N. DeCourcy, 3022 Teton Cir., Huntsville, Ala. 35810

Filed Apr. 11, 1978, Ser. No. 895,432
Int. Cl.[3] A23P 1/00; B22C 9/24
U.S. Cl. 99—426 **3 Claims**



1. The method of making a configured baking product comprising:

commencing with a generally flat plate having a plurality of spaced receptacles in its surface wherein each receptacle is adapted to hold a pair of spaced concentric tubes, and there is an opening in said plate interior of each said receptacle;

placing in each receptacle a pair of metal tubes concentrically spaced ¼ inch to ⅜ inch apart; and

placing a batter in the region between said tubes and applying heat to said batter, including the supplying of heat upward through said openings.

4,212,235

BARBECUE FOOD HOLDER

Vernon W. Snyder, Box 32, Sabetha, Kans. 66534

Filed Feb. 9, 1979, Ser. No. 10,687
Int. Cl.[2] A47J 37/00
U.S. Cl. 99—441 **4 Claims**

1. A barbecue holder comprising:

a. a pair of generally planar grids each including an open loop of wire, each having a forward and rearward edge, and adapted to be disposed in superposed relation in parallel, spaced apart planes when in a closed position,

b. a link extending between and pivotally interconnecting

the forward edges of said grids, whereby said grids may be pivotally spread apart to an open position to receive food items therebetween,

c. a pair of handles extending rearwardly respectively from the rearward edges of said grids, normally substantially in the planes of said grids, whereby said grids may be manually opened for the insertion of food items, or closed to grip and compress said food items therebetween, said handle of the upper of said grids comprising a normally straight spring handle wire extending rearwardly from said upper grid, and

d. latch means operable to secure said handles releasably together with said grids in their closed position, said latch means comprising a resilient latch wire lying alongside said handle wire, means joining said latch wire to said

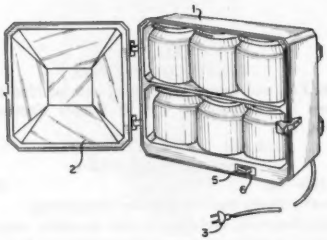
handle wire whereby the former may be moved longitudinally relative to the latter and an upwardly opening hook carried at the forward end of said latch wire and engageable slidably and detachably beneath the handle of said lower grid and spaced apart from said latch wire at such a distance that when so engaged with said lower handle closely adjacent said grids, it holds said grids in parallel planes, whereby when closing movement of said grids is arrested by food items therebetween, said latch wire may be moved rearwardly to position said hook well to the rear of said grids, said upper handle wire resiliently flexed to bring said hook into engagement with said lower handle, and said latch wire and hook moved forwardly, so that said hook wedges said handles closer together adjacent said grids to complete the closing movement of said grids.

4,212,236

DUAL POSITION YOGURT MAKING DEVICE

D. Fernando M. Guillen, Madrid, Spain, assignor to Industrias Rumbo, S.A., Madrid, Spain

Filed Jan. 3, 1977, Ser. No. 756,257
Claims priority, application Spain, Sep. 21, 1976, 223.410
Int. Cl.[2] A01J *11/04, 13/00, 15/14*
U.S. Cl. 99—467 **3 Claims**



1. A dual position yogurt making device, comprising

an elongated casing body defining a longer axis,

a lid hinged to said body,

a longitudinal partition extending along the longer axis of the body, adapted for storage of vessels therein in varying ways and depending on the arrangement of the device, with the vessels containing the milk to be coagulated,

said casing body has a base at a portion thereof remote from said lid,

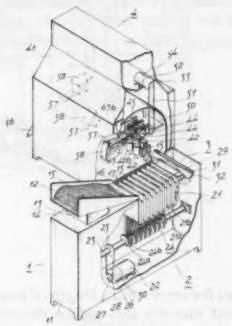
a plurality of supports being secured to said base, said plurality of supports include two upper supports when said body is turned so that said longitudinal partition is horizontal, said two upper supports being formed with a hole extending completely therethrough in a perpendicular direction to said longitudinal partition and adapted to be inserted with heads of tenterhooks, the latter being nailed into a wall, for hanging the device, said supports adapted to support said device on a horizontal surface in a position with said lid at the top.

4,212,237

AUTOMATIC ASPARAGUS PEELING MACHINE

Tauan-Yuan Hsu, No. 1-2 North Ta-Wan, Yung Kang Hsiang, Tainan Hsien, Taiwan, Taiwan

Filed Aug. 30, 1978, Ser. No. 938,218
Int. Cl.[2] A23N *7/04*
U.S. Cl. 99—589 **8 Claims**



1. An automatic asparagus peeling machine comprising:

vibrating type feeding means;

parallel guide means adapted to transport single stalks of asparagus transversely in parallel alignment from said feeding means;

conveying means which receive individual stalks of asparagus sequentially from said parallel guide means and which transport the stalks linearly in a transverse direction away from said parallel guide means; and

an automatic peeling assembly, including:

multiple guide entry means;

several pairs of vertical cylindrical rollers, aligned in parallel so as to form two files, each such roller being driven by a shaft which is adapted to swing in a pendulum fashion, said shaft being housed in a protective tube, each said pair of rollers being joined by resilient means connected to said protective tube so as to weakly bias the rollers of a pair against spreading apart beyond an initially fixed gap, and each of said rollers in said pairs being independently driven so as to rotate in opposite directions, thereby providing a linear transporting force to stalks of asparagus which enter therebetween, the combination of said resilient bias and said pendulum action being selected to avoid crushing the stalks, all said pairs of rollers being commonly driven;

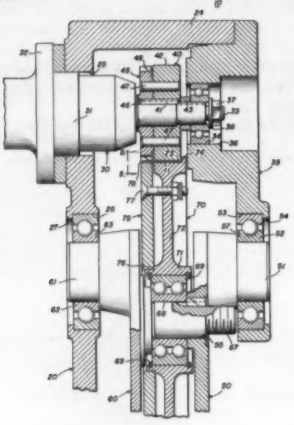
knife tool means mounted upon multiple pairs of opposed swinging arms, which arms align knives with the said files of said rollers when in peeling position and which said arms are biased to swing outwardly so as to separate the knife tools by a distance which is large compared to the diameter of asparagus stalks when said arms are in an open position; and

an enclosure, surrounding the peeling assembly and to which the said cylindrical roller pairs, said knife tool means, and said guide entry means are assembled, and where said conveying means delivers the asparagus stalks to the first of said guide means, said first guide means directing the stalks to the first of said pairs of rollers, other guide means being placed before subsequent pairs of rollers.

4,212,238
ROTARY DOG ASSEMBLY

James R. Simmons, Homewood, and Frank C. Weller, Chicago, both of Ill., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Mar. 5, 1979, Ser. No. 17,284
Int. Cl.[2] B65B *13/22*
U.S. Cl. 100—32 7 Claims



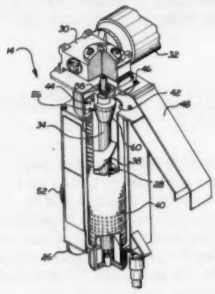
1. Apparatus for tensioning a length of strap held at one end thereof without marring the surface thereof, said apparatus comprising a drive wheel mounted for rotation about a fixed first axis and having a substantially smooth circumferential drive surface adapted to contact the associated strap in frictional engagement therewith, a feed wheel mounted for rotation about a movable second axis parallel to said first axis and having a substantially smooth circumferential feed surface adapted to contact the associated strap in frictional engagement therewith, said second axis being shiftable about a third axis parallel to said second axis to accommodate movement of said feed wheel toward and away from said drive wheel, said feed wheel being normally disposed in a rest configuration wherein a plane defined by said first and second axes is disposed at an angle less than 26 degrees with respect to a plane defined by said second and third axes and with said feed surface disposed for cooperation with said drive surface frictionally to grip the associated strap therebetween, and drive means coupled to said drive wheel for rotation thereof to cooperate with said feed wheel frictionally to move the associated strap in a tensioning direction, tensioning of the associated strap exerting a resultant force on said feed wheel tending to effect movement thereof about said third axis from said rest configuration in a direction to increase the frictional gripping force exerted on the associated strap by said feed surface and said drive surface, whereby the frictional gripping force exerted on the associated strap is increased as the tension thereof is increased for minimizing slippage of the associated strap without marring the surface thereof.

4,212,239
METHOD AND APPARATUS FOR REMOVING MOISTURE FROM WET PULP

Louis F. Fraula, Troy, and Gary V. Hoying, Sidney, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Feb. 15, 1979, Ser. No. 12,464
Int. Cl.[2] A47J *19/02*; B30B *3/00*
U.S. Cl. 100—37 24 Claims

6. In a press for extracting fluid from a slurry of solids and including an elongated tubular screen having a lower slurry inlet and an upper solids outlet, a plurality of openings defined in said screen for passage of extracted fluid to the exterior of said screen, a screw disposed within said screen and having an elongated central shaft and helical flighting mounted around said shaft with an upper end portion of said shaft extending beyond an upper end of said flighting, power means for rotating said shaft of said screw and said flighting therewith relative to said screen to cause lifting of solids in said slurry from said lower inlet toward said upper outlet and a compression cone having a central bore which receives said upper end portion of said screw shaft for disposing said cone adjacent said upper end of said flighting and adjacent said upper outlet of said screen so as to restrict passage therethrough of solids being lifted by said screw and thereby engage and cause compressive force to be exerted on the solids within said screen which results in extraction of fluid therefrom through said screen openings before discharge of the solids through said upper outlet, the improvement which comprises:



interfitting elements defined respectively on said cone and said shaft so as to mount said compression cone on said upper end portion of said screw shaft for rotational movement with said shaft and for translatory movement relative to said shaft toward and away from said upper end of said screw flighting and said upper screen outlet during rotation of said cone with said shaft.

4,212,240
TRASH COMPACTOR

Harlan E. Lee, and Lester W. Toelke, both of Houston, Tex., assignors to International Tool & Supply Company, Inc., Houston, Tex.

Filed Aug. 7, 1978, Ser. No. 931,519
Int. Cl.[2] B30B *1/32*
U.S. Cl. 100—53 23 Claims

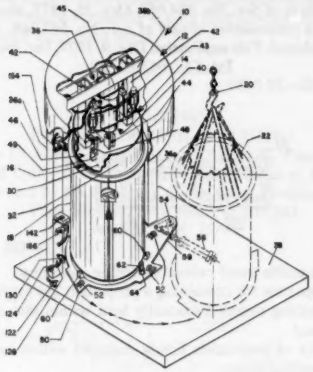
1. A heavy dhuty trash compactor comprising:

a compacting unit, including a ram movably supported in association with a ram-receiving container, for compacting trash disposed within the container; and

an electricity-free drive unit disposed in association with the compacting unit for forcefully advancing the ram into the container, the drive unit including a hydraulic system having at least one hydraulic pump for propelling the ram by hydraulic force and a pneumatic system for controllably applying gas under pressure for driving the hydraulic pump, thereby providing electricity-free drive to the compacting unit; and

a safety latch movable between latched and operating positions and disposed in association with the ram for maintaining the ram remote from the container when the latch

is in the latched position, said latch normally being resiliently urged into said latched position and being advanced



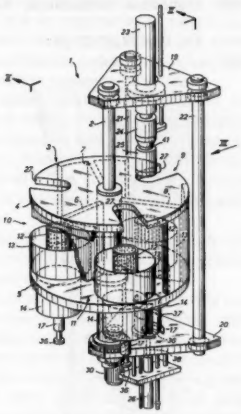
into said operating position when said ram is forcefully advanced by the drive unit into the container.

4,212,241

PROCESS OF EXTRACTING JUICE FROM A SAMPLE OF LIQUID-CONTAINING MATTER SUCH AS SUGARCANE AND AN EXTRACTOR PRESS

Gérard Pinette, Givry, France, assignor to Pinette-Emidecau S.A., Chalon sur Saone, France

Filed Nov. 22, 1978, Ser. No. 963,101
Claims priority, application France, Nov. 28, 1977, 77 35692
Int. Cl.[2] B30B *9/06, 15/02*
U.S. Cl. 100—116 38 Claims



1. In an extractor press having a plurality of work stations, means for selectively bringing the work stations individually and sequentially into position relative to a single operating station, each work station having its own sample compression means and juice evacuating means, and the single operating station having means operative cooperatively with each sample compression means for precompressing the sample and means for ejecting a depleted sample cake; the method comprising the steps of:

(a) loading a first work station in position at the single operating station with a sample of liquid-containing matter;

(b) precompressing the sample in the first work station at the single operating station utilizing the precompressing means of the single operation station;

(c) displacing the first work station away from the single operating station and bringing a second work station into position at the single operating station;

(d) repeating steps (a) and (b) with the second work station at the single operating station;

(e) beginning the compression of, and evacuation of juice from, the sample at the first work station subsequent to the precompression thereof and continuing compression and evacuation during step (d);

(f) eventually returning the first work station to the single operating station during the compression of, and evacuation of juice from, the sample at the second work station; and

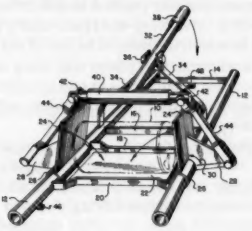
(g) ejecting the thus depleted cake from the first work station and reloading the first work station, and then precompressing a new sample therein again at the single operating station.

4,212,242

CAN CRUSHING DEVICE

Kenneth L. Willis, 407 Sierra Dr., Euless, Tex. 76039

Filed Apr. 30, 1979, Ser. No. 34,638
Int. Cl.[2] B30B *7/00*
U.S. Cl. 100—233 9 Claims



1. Apparatus for crushing cans comprising:

a planar supporting structure,

a fixed crushing plate carried on said supporting structure,

a pair of moving crushing plates rotatably carried on said supporting structure in alignment with said fixed crushing plate, whereby in a closed position first surfaces of said moving crushing plates overlie and substantially cover said fixed crushing plate,

a pair of arms each having a first end connected to a second surface of said moving crushing plates,

a lever pivotally carried by said supporting structure having a first end positioned above said fixed crushing plate and coupled to second ends of said arms, and a second end forming a grip for manual operation of said apparatus,

whereby upon lifting said grip said moving crushing plates move to an open position in which a can may be placed on said fixed crushing plate and upon forcing said grip downward said moving crushing plates move to a closed position crushing said can.

4,212,243

INSTALLATION FOR THE STAMPING OF ADVANCING ROLLING STOCK IN ROLLING MILLS AND CONTINUOUS CASTING PLANTS

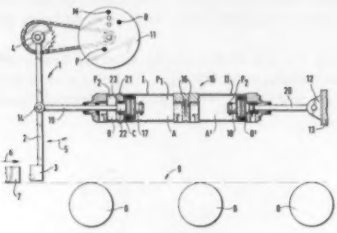
Helmut Haegermann, am Altenhof 21, 4030 Ratingen 6/Hosel, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,960

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720676

Int. Cl.[2] B44B 5/00; B41F 17/00

U.S. Cl. 101—4 2 Claims



1. A device for stamping with a die workpieces which advance along a path, the device utilizing a source of compressed air including sources of both normal and reduced pressures the device comprising:

(a) a pendulum arm for carrying the die adjacent one end thereof;

(b) a cylinder arrangement including a cylinder, a piston having one side and another side, and a piston rod coupled with said piston and extending from said other side thereof, said pendulum arm being swingable by said piston rod between an operating position in which the die will be in the path of an advancing workpiece and a non-operating position in which the die will be out of the path of the advancing workpiece, said piston rod being in a run out position when said pendulum is in said operating position, said piston being in a run out position when said pendulum is in said non-operating position;

(c) an intermediate piece defining chambers on either side of said intermediate piece, one chamber being disposed generally to said one side of said piston when said pendulum is in the operating position and being disposed to one side of said intermediate piece; the other chamber being disposed to the other side of said intermediate piece;

(d) means for effecting communication between said one chamber and the source of reduced pressure;

(e) means for establishing communication between said other chamber and the source of normal pressure;

(f) a projection on said other side of said piston;

(g) a passage through said intermediate piece, said passage and said projection being arranged and configured for mutual sealing cooperation to block said passage when said piston rod is in said run out position and to selectively establish communication between said other chamber and a part of said one chamber on said other side of said piston when said projection and said passage are out of sealing cooperation, whereby a counterforce resulting from the reduced pressure acting on said piston exceeds a pendulum withdrawing force resulting from the normal pressure acting on said shoulder member when said projection and said passage are in sealing cooperation with each other and the pendulum withdrawing force exceeds the counterforce when the projection and passage are out of sealing cooperation.

4,212,244

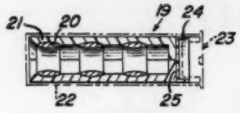
SMALL ARMS AMMUNITION

Abraham Flatau, 2004 Stockton Rd., Joppa, Md. 21085

Continuation of Ser. No. 844,863, Oct. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 567,962, Apr. 14, 1975, abandoned. This application Dec. 9, 1977, Ser. No. 858,934

Int. Cl.[2] F42B 5/00

U.S. Cl. 102—38 MM 4 Claims



1. A composite small caliber cartridge including:

a cartridge case for containing a propellant gas source, force transmitting means frictionally held within said cartridge case, and

a plurality of projectiles firmly engaged within said force transmitting means,

each of said projectiles consisting of an annular shaped hollow ring symmetrical about a center rotation axis and having a circular leading edge and a circular trailing edge, said leading and trailing edges being spaced apart a distance less than the diameter of said ring,

said plurality of projectiles in said force transmitting means having said center rotation axes in coincidence whereby rotation of said force transmitting means causes rotation of said projectiles about said coinciding axes.

4,212,245

BOTTOM FUSE

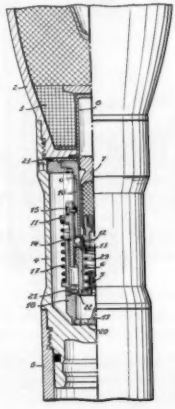
Maurice Rusbach, Vaud, Switzerland, assignor to Sarmac S.A., Geneva, Switzerland

Filed Nov. 7, 1978, Ser. No. 959,191

Claims priority, application Switzerland, Dec. 2, 1977, 14765/77

Int. Cl.[2] F42C 15/24

U.S. Cl. 102—249 7 Claims



1. Bottom fuse for an explosive projectile, comprising a hollow body, a primer and a percussion point at the rear of the hollow body, a detonator mounted for forward sliding movement in the hollow body from an inactive stocking position completely inside the body to an active working position partly outside the front of said body, means for releasably locking the detonator in said stocking position, a sleeve slidably mounted outside said body, means resiliently urging the

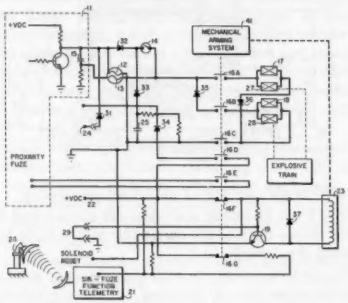
sleeve forwardly toward a foward position in which said sleeve unlocks said locking means, means to delay said forward movement of said sleeve under the influence of said urging means, and means resiliently urging said percussion point and primer away from each other.

4,212,246

FUZE ELECTRONIC CIRCUITRY

Jefferson O. Eaton, Ridgecrest, and Wilbur B. Lunt, Idlewild, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1978, Ser. No. 910,543
Int. Cl.[2] F42C *15/40*
U.S. Cl. 102—270 **7 Claims**



1. An electric circuit for a proximity fuze with a safe and arm device having safe and armed conditions located within a guided missile, comprising:

electro-mechanical means for enabling said safe and arm device to arm in response to an electric input signal;

function monitoring means effectively connected to said electro-mechanical means for indicating safe and arm device function sequence progress;

grounding means, effectively connected to said electro-mechanical means, for preventing reception of said electric input signal by said electro-mechanical means;

instantaneous detonation means, effectively connected to said proximity fuze, for detonating an explosive train in response to a close target encounter signal from said proximity fuze;

proximity fuze disablement means effectively connected to said proximity fuze for preventing transmission of said close target encounter signal;

proximity fuze selection means effectively connected to said proximity fuze for selectively enabling said proximity fuze by disconnecting said proximity fuze disablement means;

delay detonation means effectively connected to said instantaneous detonation means for delaying detonation of said explosive train for a predetermined time period in response to a direct target impact by said guided missile; and

circuit interruption means attached to said safe and arm device and effectively connected to said proximity fuze, said instantaneous detonation means, said delay detonation means, and said electromechanical means for controlling transmission of electric signals in response to the condition of said safe and arm device;

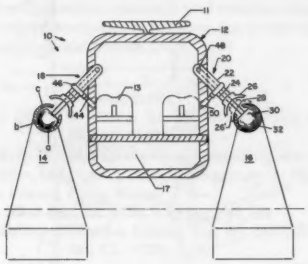
whereby selection of said proximity fuze and a close target encounter results in an instantaneous detonation of said explosive train, and a direct target impact always results in a delayed detonation of said explosive train so that a preselected time period is provided for target penetration by said guided missile.

4,212,247

TRANSIT SYSTEM

Kenneth P. Lusk, 1000 B Richmond Rd., China Lake, Calif. 93555

Filed Jul. 21, 1978, Ser. No. 926,831
Int. Cl.[2] B61D *13/04*
U.S. Cl. 104—124 **13 Claims**



1. A transportation system including:

track means comprising at least two tubular track members extending along the length of a right of way to be traversed;

each track member including a longitudinal slot in one side thereof and which slot extends the entire length thereof;

means supporting said track means along said right of way;

at least one vehicle;

at least one running gear on each side of each said vehicle and extending from said vehicle at an acute, downwardly sloping angle from the vehicle to said track members;

each said running gear having an outboard end adapted to engage within one of said tubular track means through said slot therein including a running gear member having a generally circular area in orthogonal cross section slightly less than the cross sectional area of the inside of said tube and effective with the inner surfaces of said tube to provide support and guidance for said vehicle.

4,212,248

APPARATUS AND METHOD FOR REDUCING INTERLINE TWISTING

Richard W. Maybury, Gorleston, England, assignor to Brown & Root, Inc., Houston, Tex.

Filed Mar. 2, 1978, Ser. No. 882,794
Int. Cl.[3] B61B *13/10*
U.S. Cl. 104—138 G **12 Claims**

1. An apparatus for reducing interline twisting of any pair of a plurality of lines connected between a device for traversing the interior of an elongated tubular member and a tubular member exit opening, as the device traverses an interior section of the tubular member, said device tending to rotate about its longitudinal axis as it traverses said tubular member interior section,

said apparatus comprising

a barrier guide member having

a barrier body portion,

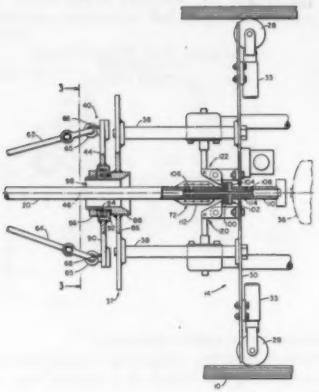
means for mounting said barrier body portion on said device for rotational movement about a barrier member rotation axis, said rotation axis being substantially parallel to said device longitudinal axis, and said body portion having means for maintaining the orientation of said body portion substantially fixed with respect to the direction of gravitational pull of the earth,

at least one line receiving member, each line receiving member being connected to at least one of a first group of said lines, and

first means for connecting each said line receiving member to said body portion at at least one connection

point, to provide a relatively fixed spatial orientation for said line receiving member,

second means for connecting each line of a second group of said lines directly to said device without attachment to the barrier guide member, and



said second connecting means interacting with said barrier guide member for preventing each line of said second group from encircling any connection point on the barrier guide member whereby interline twisting is reduced.

4,212,249

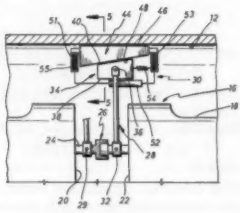
DYNAMIC-COMPENSATING MAGNETIC SUPPORT APPARATUS

Alexander I. Kalina, 5565 Gasmer #674, Houston, Tex. 77035

Filed Jul. 17, 1978, Ser. No. 925,513

Int. Cl.[2] **B61B** *13/10*

U.S. Cl. 104—281 **8 Claims**



1. Magnetic supporting apparatus comprising:

a magnet means for producing an upward load-supporting force, the magnet means including an upper inclined surface;

an arm attached at one end to said magnet means and attachable at another end to a load, said arm being operable to transmit the upward load-supporting force to such a load; and

adjusting means for adjusting a magnitude of the upward load-supporting force in relation to a magnitude of a downward force of such a load, said adjusting means being substantially continuously operable and comprising a friction foot having a magnetic member-engaging surface and being positionable between said magnet means and a surface of a magnetic member to transmit a magnetic field of said magnet means and to frictionally engage such a magnetic member, the friction foot having a lower inclined surface adjacent to and cooperable with the upper inclined surface of the magnet means to transmit a magnetic field through said friction foot at predetermined positions on said magnet means, and magnetic field reducing means for reducing a portion of the magnetic field of said magnet means.

4,212,250

MINE LOCOMOTIVE

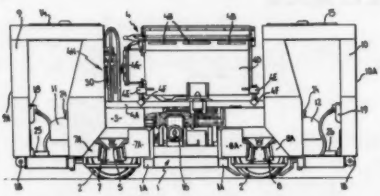
William F. Burgess, Maltby, England, assignor to Thomas Hill (Rotherham) Limited, Rotherham, England

Filed Apr. 14, 1978, Ser. No. 896,298

Claims priority, application United Kingdom, Apr. 16, 1977, 15874/77

Int. Cl.[2] **B60K** *27/00, 33/00;* **B61C** *3/00*

U.S. Cl. 105—50 **8 Claims**



1. A vehicle for carriage of personnel comprising:

a vehicle body including a driving cab at each end thereof;

traction means operatively carried by said vehicle body for driving the vehicle;

driving control means in each driving cab, said driving control means in each cab being respectively linked to said traction means, each driving control means being operative to permit movement of the vehicle only in the direction the cab faces, and both driving control means including braking means for the vehicle;

and selector means operatively connected to each of said driving control means, said selector means having at least two positions, a first position for activating said driving control means in one of said cabs and a second position for activating said driving control means in the other of said cabs.

4,212,251

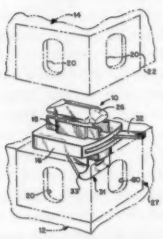
KEY ACTUATED STACKER LOCKING DEVICE

John M. DiMartino, Sayville, N.Y., assignor to Line Fast Corporation, Holbrook, N.Y.

Filed Nov. 30, 1977, Ser. No. 855,918

Int. Cl.[2] **B65D** *21/02, 25/20;* **B65J** *1/22*

U.S. Cl. 24—73 R **4 Claims**



1. A selectively operable stacker key locking device adapted to secure a first corner fitting of a first shipping container to a second corner fitting of a second container in an adjacent stacked relation, each of the corner fittings having a web portion defining an elongated opening therein comprising:

a. a planar base member adapted to keep the first and second

corner fittings in a spaced apart relationship when inserted therebetween;

b. a neck member affixed to said planar base member and extending upwardly therefrom, said neck member being dimensioned and configured to enter the opening of a web portion of the first corner fitting and neck member defining an inner open portion which extends therethrough having a first set of screw threads on the wall of the neck defining the inner open portion thereof;

c. an elongated shank member extending upwardly from said planar base member and through the open portion of the neck member, said shank member being rotatable within the neck member and having a second set of screw threads on the outer portion thereof, said second set of threads being mateable and capable of co-acting with said first set of threads in said neck member;

d. a crosshead member affixed to the upper end of the shank member, said crosshead member having at least one elongated flange dimensioned and configured to enter the opening defined by a web portion of the first corner fitting when aligned therewith in a first position and rotatable to a second locking position such that at least one dimension of the crosshead exceeds a corresponding dimension of the web opening to lock the crosshead member within the web;

e. an elongated handle substantially rigidly connected to the shank member, said handle extending outwardly through the base member such that rotation of the handle from a first position to a second position results in a corresponding rotation of the crosshead from said first position to said corresponding second locking position;

f. the bias of said first set of screw threads and said second set of screw threads being set in a direction such that when said shank portion is rotated in the inner open portion of the neck to rotate the crosshead member to a second locking position the crosshead member is directionally gathered closer to the base member and that when said shank portion is rotated in the open portion of the neck to rotate the crosshead member to said first position the crosshead member is directionally urged apart from the base member;

g. means on the lower portion of the base member for attaching the planar base member to a second corner fitting on a second container; and

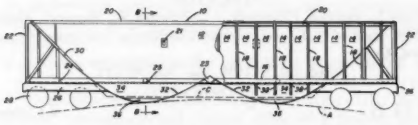
h. means for greasing said threads through said neck portion.

4,212,252

GONDOLA-TYPE RAILWAY CAR

James D. Hart, Grove City, and Joseph C. Lightner, Greenville, both of Pa., assignors to Greenville Steel Car Co., Greenville, Pa.

Filed Feb. 2, 1978, Ser. No. 874,616
Int. Cl.[2] B61D *7/00, 17/00*
U.S. Cl. 105—406 R **5 Claims**



1. A gondola-type railway car comprising:

(a) an upper body, said upper body including a pair of side sills which extend the length of said car, one on each side thereof; a plurality of side panels attached to and extending generally upwardly from each side sill; a pair of downwardly sloping end plates, each extending transversely across said upper body between said side panels and located at an end of said car;

(b) a pair of truck assemblies, each attached at an end of said car to the upper body and positioned below said side sills;

(c) a transverse center cross ridge member extending transversely across said upper body and located midway between said end plates; and

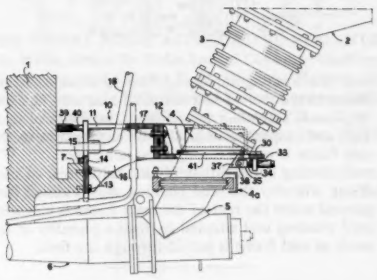
(d) a doorless bottom member extending below said side sills and including at least two bottom sheets each having a parabolic shape taken in a vertical plane parallel to the length of said car and attached at an edge to said end plate at a position near the end of the car and at an opposing edge to said transverse center cross ridge member; two pairs of wall members, each said wall member attached to and extending downwardly between one of said side sills and an edge of said bottom sheet.

4,212,253

SUPPORT DEVICE FOR A BLAST DOWNPIPE OF A BLAST-FURNACE

Henry Voituriez, Dunkerque, and René Aymard, Grande Synthe, both of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Paris, France

Filed Sep. 29, 1978, Ser. No. 946,736
Claims priority, application France, Sep. 30, 1977, 77 29508
Int. Cl.[2] F23L *1/00*
U.S. Cl. 110—182.5 **10 Claims**



1. A device for supporting a lower end element of a blast downpipe of a blast furnace, which end element is superjacent to an elbow element which carries the nozzle of a tuyere, for maintaining said end element in a fixed position when removing the elbow element from said end element for maintenance, the device comprising a support unit for fixing to a rigid casing of the blast furnace and defining at least one supporting and guiding slideway means, a member fixed on said end element and slidably supported on said slideway means, and means for maintaining the position of said member on said slideway means when removing said elbow element from said end element.

4,212,254

TILLER PLANTER WITH MODIFIED SEED BED FINISHING IMPLEMENT

Vincent J. Zumbahlen, Newton, Ill.

Continuation-in-part of Ser. No. 647,655, Jan. 8, 1976, Pat. No. 4,048,929. This application Sep. 19, 1977, Ser. No. 834,191
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.[2] A01C *5/00, 5/08*
U.S. Cl. 111—52 **15 Claims**

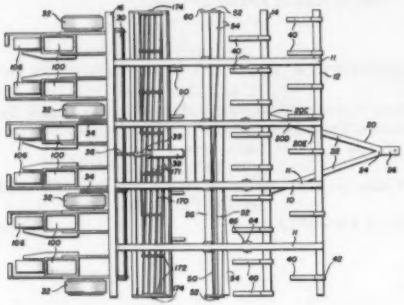
1. A machine for tilling and planting the surface of a field comprising:

a frame adapted for movement across a field, said frame adapted to be drawn by a prime mover tractor, the longitudinal attitude of said frame being adjustable from said tractor, whereby the operator of said tractor can independently adjust both the elevation of the front of said frame and the elevation of the rear of said frame;

a plow unit mounted below the forward portion of said

frame, said plow unit comprising a plurality of chisel plows adapted to plow the soil as said frame is moved through the field;

a reel unit flexibly mounted below said frame, to the rear of said plow unit, said reel unit extending substantially the width of said plow unit, adapted to rotate as said frame is pulled through the field and thereby pulverize the soil, said reel unit being biased downwardly but being limited as to downward movement and as to depth of soil penetration;



a seed bed finishing implement flexibly mounted below said frame to the rear of said reel unit, said seed bed finishing implement extending substantially the width of said plow unit, and adapted to finish the soil to prepare a seed bed as said frame is pulled through the field; and

a seed planting unit rigidly mounted on the rear of said main frame whereby the seed planting unit is raised from the ground when the rear of the main frame is elevated, said seed planting unit adapted to plant a plurality of rows of seeds as said frame is pulled through the field.

4,212,255

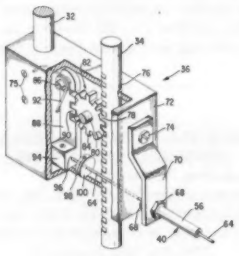
SEWING MACHINE TREADLE WITH A VARIABLE LENGTH CONTROL LINKAGE

Paulus W. Wolf, Karlsruhe, Fed. Rep. of Germany, assignor to The Singer Company, Stamford, Conn.

Filed Apr. 24, 1979, Ser. No. 32,806

Int. Cl.[2] D05B *75/06*

U.S. Cl. 112—217.1 **5 Claims**



1. An adjustable height sewing machine stand comprising base means, telescoping column pedestal means extending upwardly of said base means for supporting a sewing machine at an adjustable height above said base means, column pedestal locking means for selectively locking said pedestal means to support such machine at a desired height above said base means and unlocking said pedestal means for raising and lowering such machine, treadle means associated with said base means for movement in response to foot pressure by a machine operator, variable length control linkage means connected with said treadle means and connectable with such machine to enable operator foot control thereof, said linkage means including a pair of generally parallel link rods, link rod locking means for selectively locking said link rods together to enable movement of said treadle means to be transmitted through the locked said link rods and unlocking said link rods to enable adjustment of the combined length thereof, and remote actuating means for said link rod locking means enabling adjustment thereof into a locking or unlocking mode during adjustment of said pedestal means.

4,212,256

DETACHABLE SOLE PLATE

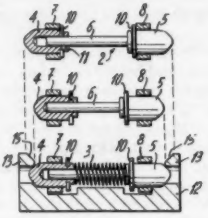
Antonio Jimenez, Meyrin, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Nov. 20, 1978, Ser. No. 963,469

Claims priority, application Switzerland, Nov. 25, 1977, 14468/77

Int. Cl.[2] D05B *29/00, 29/12*

U.S. Cl. 112—240 **4 Claims**



1. A sewing machine presser foot including a sole plate and a support therefor, said support including a pair of spaced arms, each of said arms provided with a bore, a pin assembly compressible in a longitudinal direction and fixed in said bores of the arms of said support, said sole plate being attachable to and detachable from said pin assembly and including a flange on its upper face extending along each of its longitudinal edges, each said flange having an opening therein, said openings being aligned with each other, the ends of said pin assembly being of substantially hemispherical shape and of a greater diameter than the diameter of said openings, a ramp on each flange above each of said openings, said ramps being inclined toward each other whereby they guide said pin assembly into said openings when the ends of said pin assembly are engaged by said ramps and moved toward said openings.

4,212,257

SEWING MACHINE FULL AND LOW BOBBIN INDICATOR

William L. Herron, Elizabeth, and Edward W. Rummel, Short Hills, both of N.J., assignors to The Singer Company, Stamford, Conn.

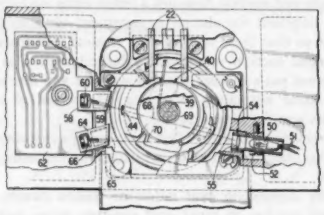
Filed Jul. 5, 1979, Ser. No. 55,137

Int. Cl.[2] D05B *45/00*

U.S. Cl. 112—278 **4 Claims**

1. A lockstitch sewing machine comprising a frame, said frame supporting sewing instrumentalities including a needle carrying needle bar supported by said frame for endwise reciprocation, a feed system for urging work material in a path under said needle, a looptaker supported in said frame for cooperation with said needle in the formation of stitches, a bobbin case supported by said looptaker, said bobbin case supporting therein a bobbin having a pair of flanges separated by a thread carrying hub, said bobbin case and said bobbin extending from said looptaker a sufficient distance to have a flange and a portion of said hub of said bobbin extending therefrom, a light source situated adjacent said looptaker and ex-

tending light rays above said looptaker and through apertures in said extending portion of said bobbin case provided therefore, a first and a second light sensor on the opposite side of said looptaker from said light source, said first light sensor being aligned in a path extending between said light source and said first sensor adjacent said hub of said bobbin, the second



light sensor being arranged in a path extending between said light source and said second sensor substantially tangent to the periphery of an imaginary cylinder having the bobbin flanges as extremes thereof, and means for providing an indication of a completed light path between said light source and said first light sensor and an indication of an interrupted light path between said light source and said second light sensor.

4,212,258

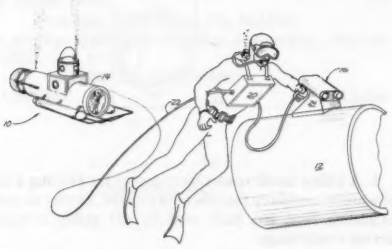
UNDERWATER APPARATUS FOR ACOUSTICALLY INSPECTING A SUBMERGED OBJECT

H. Dale Collins, Richland, Wash., assignor to International Submarine Services, S.A., London, England

Filed May 12, 1978, Ser. No. 905,203

Int. Cl.[2] B63G *8/00*

U.S. Cl. 114—312 **7 Claims**



1. Underwater apparatus for acoustically inspecting a volume of a submerged object, comprising:

an underwater vehicle capable of transporting humans and equipment to a submerged object having an accessible surface;

a portable acoustical probe capable of being carried and easily applied to the surface of the submerged object by a diver for acoustically inspecting the interior of the object;

a data transmission and control cable of a desired length operatively interconnecting the portable acoustical probe with the underwater vehicle to enable the probe to be operated spaced from the underwater vehicle;

said portable acoustical probe having a generally two dimensional array of acoustical transducers for receiving transmit electrical pulse signals and in response thereto directing pulsed acoustical wave energy into the volume during a transmit mode and for receiving reflected pulsed acoustical wave energy from the volume and in response thereto generating received electrical pulse signals during a receive mode;

electronic scan control means operatively connected to the transducers (a) generating the transmit electrical pulse signals, (b) for selecting various combinations of the transducers with each combination of transducers associated with a portion of the volume having a selected focal point, (c) for adjusting the phases of the transmit electrical signals in relation to the relative distances between the selected transducers and the selected focal point during the transmit mode, (d) for mixing the phase adjusted transmit electrical pulse signals with the received pulse signals to focus the combination of the transducers on the corresponding selected focal point during the receive mode, and (e) for sequencing the combination of transducers during both the transmit and receive modes to sequentially scan portions of the interior to obtain high contrast acoustical information from such scanned portions;

visual display means in the underwater vehicle operatively connected to the electronic control means and responsive to the electrical signals for displaying a real-time visual image of the interior of the object.

4,212,259

MARINE VESSEL NOISE ATTENUATING STRUCTURE

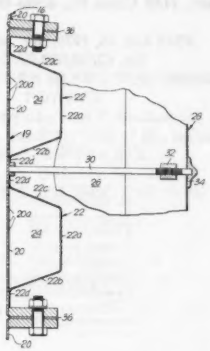
Victor A. Webb; Arthur D. Wells, both of Coventry; Geoffrey C. Clarke, Rugby, and Charles P. R. Peecock, Harrow, all of England, assignors to Rolls-Royce Limited, London, England

Filed Dec. 15, 1978, Ser. No. 969,978

Claims priority, application United Kingdom, Dec. 22, 1977, 53882/77

Int. Cl.[2] E04F *17/04*

U.S. Cl. 115—73 **10 Claims**

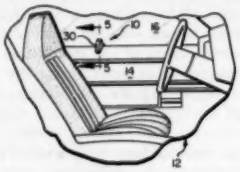


1. A marine vessel having a gas turbine engine power plant, said gas turbine engine power plant having an associated gas flow duct supported by structure of the marine vessel and located within a well in the vessel structure, said gas flow duct having a plurality of perforate portions interspaced with plain portions, a plurality of circumferentially arranged axially spaced non-porous channel members attached to said gas flow duct and axially spaced from each other along the gas flow duct adjacent each of said respective perforate portions, said channel members and said perforate portions of the gas flow duct together defining a plurality of trapezoidal section annular noise attenuating cells with said plain portions being positioned between adjacent cells, and at least one layer of heat insulating material surrounding the exterior of said non-porous channel members, and covering means surrounding said insulating material and containing the same, said covering means being secured to said gas flow duct.

4,212,260
AUTOMOBILE HEADLIGHT REMINDER DEVICE

Robert Splan, 900 E. Wilmette, Palatine, Ill. 60067

Filed Jun. 28, 1979, Ser. No. 53,067
Int. Cl.[2] B60Q 9/00; G09B 7/18
U.S. Cl. 116—28 R 7 Claims

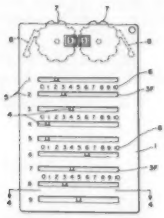


1. Apparatus for reminding a driver to turn off automobile headlights before locking an automobile door, comprising: a sheath member defining an enclosure for concealing an interior automobile door lock actuating post and removably mountable thereover, and a bracket member coupled to said sheath member and movable relative thereto for engaging an automobile window slot adjacent said door lock actuating post for maintaining said sheath member in a position for concealing said door lock actuating post, whereby said apparatus must be removed by the driver from the door lock actuating post in order to actuate the post to its locking position, thereby reminding the driver to turn off the automobile headlights before locking the door.

4,212,261
GOLF SCORE KEEPING DEVICE

John Gaetano, 1143 Crane St., Suite D, Menlo Park, Calif. 94025

Filed Jan. 25, 1979, Ser. No. 6,270
Int. Cl.[2] A63B 71/06
U.S. Cl. 116—224 4 Claims

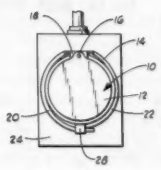


1. A device for keeping a golf score comprising:
a pair of rectangular oppositely faced panels joined at their periphery to define a space there between;
nine parallel horizontal slots positioned at regular intervals through the first of said panels and bearing graduations 1 through 9 opposite one end of each slot respectively;
nine parallel horizontal slots positioned at regular intervals through the second of said panels, said slots being staggered in relation to said slots in said first panel and bearing graduations of 10 through 18 opposite one end of each slot respectively;
numbers 1 to 10 positioned at equally spaced intervals along each of said slots; slide means positioned in said space between said panels disposed for horizontal movement along said slots and having an indicator means projecting through said slots;
said indicator means forming a part of said slide means;
a plurality of series of positive stops positioned along each side of said slots in said space between said panels disposed to arrest the movement of said slide means when said indicaor is opposite each of said numbers in turn;
said indicator means being disposed for motion in a direction perpendicular to said slots and said stops;
an enlarged section adjacent said indicator means and forming a part of said slide means and being wider than said slots;
said enlarged section forming a ledge upon said slide means and disposed for sliding engagement with said positive stops so that these can be only vertical movement of said enlarged section when said enlarged section is between adjacent pairs of said positive stops in any one series;
spring arms adjoining said enlarged section of said slide means and forming a part thereof;
legs positioned on the end of said spring arms disposed for sliding upon the interior surface of the oppositely spaced panel;
whereby depressing said indicator means causes said enlarged section to clear said positive stops and permits movement of said slide means in a horizontal direction, and releasing said indicator means causes said enlarged section and said indicator to move in a vertical direction between said positive stops thereby positioning said slide and said indicator means in a position opposite any desired one of said members along said slots and providing positive engagement of said indicator in said position.

4,212,262
UTILITY METER READER ALERT DEVICE

Bruce L. Gorrell, 157 N. Evergreen, Wichita, Kans. 67212

Filed Jan. 29, 1979, Ser. No. 7,349
Int. Cl.[2] G01D 11/26; G09F 9/00
U.S. Cl. 116—307 4 Claims



1. A utility meter reader alert device for alerting a customer of a utility company that his utility meter, having an outwardly extending face, has been read by the utility company, the device comprising:
a cover disposed in front of the glass face of the meter and dimensioned for covering the individual dials in the meter, the dials indicating the usage of the utility by the customer; and
attachment means for securing the cover to the outwardly extending glass face of the meter, the cover pivotally attached to the attachment means and parallel to the front of the face of the meter so that the cover may be rotated thereon to expose the individual dials in front of the meter when the meter has been read by the utility company.

4,212,263
PRINTING PLATE PROCESSING MACHINE

Charles R. Hillhouse, Aurora, Mo., assignor to Tasope' Limited, Aurora, Mo.

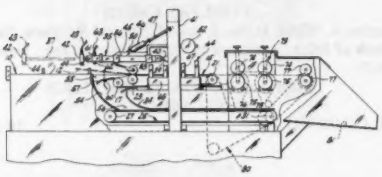
Filed Nov. 15, 1978, Ser. No. 960,740
Int. Cl.[2] B05C 11/00
U.S. Cl. 118—37 10 Claims

1. In a printing plate processing machine:
(a) a loading station for receiving a loading stack of alternately disposed printing plates and plate-separating paper sheets,
(b) a first conveyor means for receiving the printing plates,

(c) a second conveyor means for receiving the plate-separating paper sheets,

(d) feed means selectively transporting the plates and paper sheets alternately from the loading stack toward the first and second conveyor means,

(e) plate and paper sheet diverting means between the first and second conveyor means for alternately delivering the plates to the first conveyor means and the paper sheets to the second conveyor means,



(f) plate-processing means for processing the plates after disposition on the first conveyor means, and

(g) a collecting station for receiving the same plates and same paper sheets from the first and second conveyor means respectively and for disposing the plates and paper sheets alternately in a single collecting stack after processing of the plates.

4,212,264

APPARATUS FOR SUPPLYING ELECTROPHOTOGRAPHIC DEVELOPER

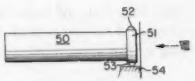
Wilhelm Knechtel, Biebertal, and Taisuke Tokiwa, Fernwald, both of Fed. Rep. of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

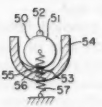
Filed May 5, 1978, Ser. No. 902,905

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723805

Int. Cl.[2] G03G *15/08*

U.S. Cl. 118—653 **19 Claims**





1. Electrophotographic developing apparatus comprising:

means for applying developer onto a surface to be developed;

means provided in a vicinity of said applying means for conveying developer to said applying means; and

means for supplying developer to said developer conveying means, said supplying means including a housing, a developer cartridge having an opening at one end and rotatably supported in said housing about its substantially horizontally oriented longitudinal axis, means for rotating said cartridge, and means for vibrating said cartridge in a direction different from the rotational direction of said cartridge, said vibrating means comprising a cam and a follower, both of which are provided at an end of said cartridge.

4,212,265

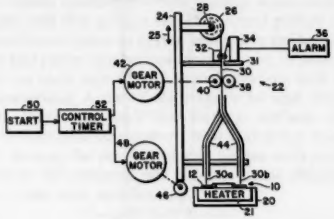
TINNING APPARATUS FOR MULTIPLE SOLDER SURFACES

Howard D. Buxton, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1978, Ser. No. 929,384

Int. Cl.[2] H01R *43/02*

U.S. Cl. 118—700 **3 Claims**



1. Apparatus for solder tinning a plurality of bonding surfaces simultaneously, the apparatus comprising in combination:

solder feeding means for depositing a predetermined quantity of solder simultaneously on each of the plurality of bonding surfaces;

preheater means for raising the temperature of the plurality of bonding surfaces to the melting temperature of said solder; and

timer means for controlling said solder feeding means to deposit said predetermined quantity of solder on each of the plurality of bonding surfaces.

4,212,266

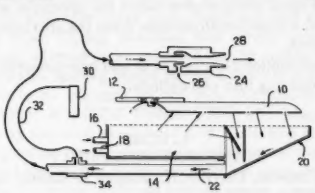
CATCHER AND RETURN DEVICE FOR OVERSPRAYED POWDER

Robert D. Payne, Countryside; Fred E. Buczkowski, Cicero, and Wesley J. Szpitalak, Palos Park, all of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,158

Int. Cl.[3] B05B *5/08*; B05C *7/02, 19/00*

U.S. Cl. 118—712 **10 Claims**

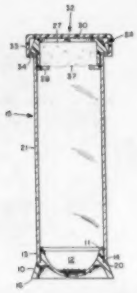


1. For use in an apparatus for applying a powder stripe to the interior of a tubular member, a catcher for separately receiving deflected and stray powder particles, said catcher comprising an upstanding mounting plate, a powder passage through an upper portion of said mounting plate for receiving stray powder particles, a catcher housing extending horizontally from said mounting plate in horizontal alignment with said powder passage, said catcher housing being closed with the exception of a horizontally extending open top and having a sloping bottom wall sloping downwardly towards said mounting plate, said catcher housing open top forming means for receiving deflected particles and a return passage through said mounting plate opening into said catcher housing adjacent said bottom wall.

4,212,267
INSECT STUDY STATION

Irvin G. Patterson, 2730 Hwy. 90 West, Seguin, Tex. 78155

Filed Dec. 8, 1978, Ser. No. 967,582
Int. Cl.[2] A01K *67/00*
U.S. Cl. 119—1 5 Claims

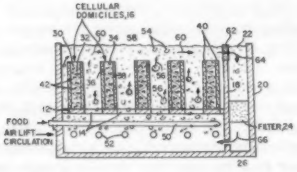


1. An insect study station comprising:
a. a base having a configuration adapted to telescopically engage and detachably retain an elongated cylinder,
b. a cylinder having a base end and a top end, the base end of said cylinder telescopically engaging said base,
c. a cap means enclosing the top end of said cylinder, said cap means further comprising:
(1) an undercap having constructed in its outer diameter,
(2) a cap sleeve penetrating and telescopically engaging said top end of said cylinder,
(3) said cap sleeve terminating in a cap stop,
(4) the interior of said undercap comprising a cap recess adapted to receive and retain a cotton ball,
(5) a multiplicity of apertures dispersed adjacent the periphery of said undercap,
(6) an overcap telescopically engaging and encasing said undercap,
(7) a multiplicity of apertures dispersed adjacent the periphery of said overcap, and
(8) the dispersal and spacing of said apertures in said overcap and said undercap being such as to provide for an open configuration when the apertures are aligned and a closed configuration when the apertures are staggered,
d. an indentation constructed in said base comprising a food cup opening into said cylinder.

4,212,268
AQUACULTURE HABITAT

Paul W. Chapman, Derry, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jun. 26, 1978, Ser. No. 918,885
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—2 8 Claims

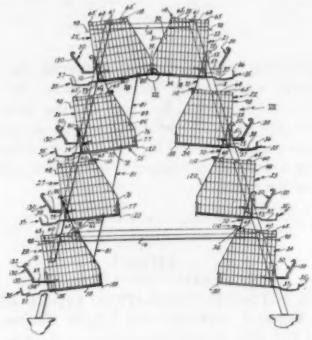


6. A method of providing food, air, and water to animal rearing compartments comprising the steps of:
providing in a tank of water compartments having openings and mesh means covering said openings;
positioning food distribution means beneath said compartments in said tank; and
providing air lift circulation means beneath said food distribution means, such that bubbles formed by said air lift circulation means carry food from the food distribution means into the vicinity of said mesh means.

4,212,269
POULTRY CAGES

Charles A. White, Holland, and W. Ronald Williams, Saginaw, both of Mich., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 24, 1978, Ser. No. 871,821
Int. Cl.[2] A01K *31/06*
U.S. Cl. 119—17 14 Claims



14. A poultry cage assembly comprising:
a plurality of vertically spaced rows of wire mesh cages each having a floor, a rear, a top, a front and partitions dividing the rows into separate cages;
a pair of spaced A-frames having upwardly inwardly extending legs;
means for mounting said rows of cages on said legs of and extending between said A-frames such that the junction of the floor and rear of the uppermost rows of cages contact one another;
means for securing said uppermost rows of cages to one another at said junction to provide support for the assembly between said legs; and
a plurality of hangers coupled between vertically spaced rows of cages of each side of said A-frame to provide vertical support for the rear portion of said cages.

4,212,270
COOLING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

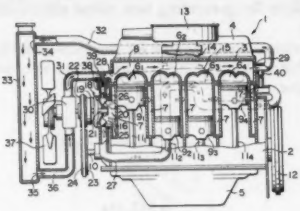
Kiyoshi Nakanishi, and Takeshi Okumura, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 22, 1977, Ser. No. 835,722
Claims priority, application Japan, May 24, 1977, 52-60063
Int. Cl.[2] F01P *7/16*
U.S. Cl. 123—41.09 2 Claims

1. A cooling system for an internal combustion engine which has a cylinder block and a cylinder head, comprising a first circuit means which circulates cooling water through said cylinder block, and a second circuit means which circulates cooling water through said cylinder head, wherein:
the first circuit means comprises a first water pump and a passage portion formed in said cylinder block,
and the second circuit means comprises a second water

pump, a radiator, and a passage portion formed in said cylinder head,

further comprising: a first connecting passage means which connects a portion of said second circuit means located downstream of said radiator to a portion of said first circuit means located upstream of said first water pump, a second connecting passage means which connects a portion of said first circuit means located at the exit of said passage portion formed in said cylinder block to a portion of said second circuit means located at the exit of said cylinder head,



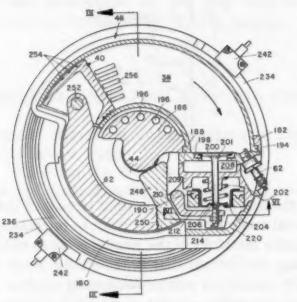
and a thermostat valve incorporated in said first connecting passage means which responds to the water temperature in said first circuit.

4,212,271

RADIAL TORQUE INTERNAL COMBUSTION ENGINE

Dale L. Rigterink, 237 Van Raalte Ave., Holland, Mich. 49423

Filed Jun. 1, 1978, Ser. No. 911,347
Int. Cl.[2] F02B *53/00*
U.S. Cl. 123—43 B **6 Claims**



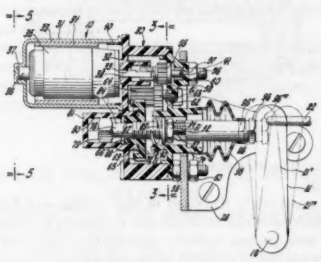
1. In a rotary internal combustion engine including a housing having a plurality of combustion chambers formed therein; means including a supporting framework mounting said housing for rotation about an axis defined by a shaft member, said shaft member supporting said combustion chambers for rotation therewith, said chambers being formed in said housing circumferentially with respect to said axis; a plurality of pistons cooperably operable in said combustion chambers to cause said housing to rotate; means for supporting said pistons for movement in said chambers with respect to said housing, said supporting means including a sleeve member journaled on said shaft member, said pistons having a connecting rod attached thereto and to said sleeve, said pistons and said housing being alternately movable toward and away from each other with rotation of said housing between at least compression and power strokes; means forming fuel inlet and exhaust passageways communicating with said combustion chambers; biasing means associated with said pistons for urging said pistons in the same direction of movement as said housing for moving said pistons into said chambers in a compression stroke; ignition means for igniting a fuel mixture in said combustion chambers at a predetermined position of said pistons during said compression stroke to thereby initiate a power stroke; means for holding said pistons with respect to said frame during said power stroke to prevent retrograde movement of said pistons thereby to urge said housing to rotate about said axis, said holding means including a brake, said brake including a first portion fixed relative to said supporting framework and a second portion fixed relative to said sleeve member, said sleeve being operatively connected to said holding means, and means for engaging said first portion and said second portion to hold said pistons from movement during said power stroke, said first portion of said brake member comprising a pair of brake shoes positioned on each side of said second portion, said second portion comprising a disc fixed relative to said sleeve for movement therewith, said disc having surfaces thereon adapted for frictional engagement with said brake shoes; and means for sensing the position of said pistons with respect to said chambers for releasing said holding means allowing said pistons to rotate with said housing.

4,212,272

IDLE SPEED CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Rufus L. Hawk, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1978, Ser. No. 959,327
Int. Cl.[2] F02D *11/10*
U.S. Cl. 123—339 **3 Claims**



1. An idle speed control device for an internal combustion engine having a throttle valve control member that is spring biased in a valve closing direction, said device comprising housing means adapted to be mounted on the engine, a shaft supported by said housing means having a throttle stop at one end adapted to be engaged by and stop the throttle valve control member in various throttle valve idle positions as determined by the axial position of said shaft, said shaft and said housing means having cooperating shaft mounting means by which said shaft is free to move axially but cannot rotate, a reversible motor mounted on said housing means, speed reducing gear means mounted in said housing means including an annular gear that is driven at reduced speed by said motor and is free to move axially to a limited extent, said housing means including gear travel stop means for limiting axial movement of said annular gear, said shaft extending through and having extension and retraction stop means facing opposite sides of said annular gear, said annular gear having an internal thread, said shaft having a screw thread between its two said stop means engageable with the thread in said annular gear whereby said shaft is caused to retract to effect throttle valve closing movement on rotation of said annular gear in one direction by said motor and said shaft is caused to extend to effect throttle valve opening movement on rotation of said annular gear in the opposite direction by said motor, a pivot plate pivotally supported in said housing means, spring means for pivoting said pivot plate to engage and hold said annular

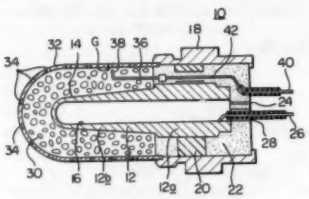
gear against one of said gear travel stop means when the throttle control member is removed from said throttle stop and yielding to permit said annular gear to move to engage and be held against the other of said gear travel stop means when the spring biased throttle control member engages said throttle stop, and switch means mounted in said housing means for controlling whether said motor can operate, said switch means including a switch blade connected to said pivot plate so as to close said switch means to permit motor operation when the pivot plate is forced to pivot and hold said annular gear against said other gear travel stop means by the spring biased throttle control member engaging said throttle stop and to open said switch means to prevent motor operation when the pivot plate is forced to pivot and hold said annular gear against said one gear travel stop means when the throttle control member is removed from said throttle stop.

4,212,273

AIR FUEL SUPPLY SYSTEM AND OXYGEN SENSOR THEREFOR

Hiroyuki Maruoka, No. 3-4-5, Kami-ohokanishi, Konan-ku, Yokohama City, Japan

Filed Oct. 7, 1977, Ser. No. 840,244
Claims priority, application Japan, Oct. 8, 1976, 51-121406
Int. Cl.[2] G01N *27/58*; F02M *7/00*
U.S. Cl. 123—438 **13 Claims**



1. A gas sensor comprising:

a casing;

a solid electrolyte disposed in said casing and having first and second surfaces which are respectively covered with first and second metallic electrodes, said first metallic electrode being adapted to be exposed to a gas subject to measurement and said second metallic electrode being adapted to be exposed to a reference gas;

supporting means supporting said electrolyte in said casing;

a layer of oxidizing catalyst disposed on said first metallic electrode to cover at least a portion of same; and

an electric heat generator separate and distinct from said catalyst and disposed in said layer of the catalyst for generating heat when electrically energized.

11. An air-fuel mixture supply system for an internal combustion engine having an intake conduit system in which a throttle valve is operatively arranged, comprising:

an air-fuel mixture supply means for controlling the amount of fuel fed into the engine in response to command signals applied thereto;

a control unit for applying said command signals to said air-fuel mixture supply means in response to information signals applied thereto;

an oxygen sensor disposed in said intake conduit system to project into an intake passage downstream of said throttle valve, said sensor producing said information signals by detecting the oxygen content in said intake passage and comprising a casing electrically and mechanically connected to said intake conduit system, an electrolyte disposed in said casing and having first and second surfaces which are respectively covered with first and second metallic electrodes, said first metallic electrode being adapted to be exposed to the interior of said intake passage and second metallic electrode being adapted to be exposed to a reference gas, an electrically conductive supporting member disposed in said casing to support said electrolyte while providing an electrical connection between said first metallic electrode and said casing, a layer of oxidizing catalyst disposed in said first metallic electrode to mantle said electrolyte while being exposed to the interior of said intake passage, and an electric heat generator separate and distinct from said catalyst and disposed in said layer of catalyst for generating heat when electrically energized; and

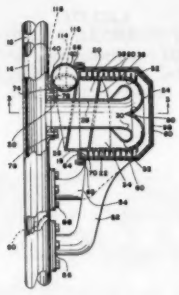
an electrical power source for energizing said heating means within a predetermined period of time after starting of said engine.

4,212,274

POLLUTION EMISSION CONTROL AND FUEL SAVING DEVICE FOR INTERNAL COMBUSTION ENGINES

Thomas E. Quick, 1616 Park Pl., Wichita, Kans. 67203

Continuation-in-part of Ser. No. 722,601, Sep. 13, 1976, abandoned, and a continuation of Ser. No. 454,475, Mar. 25, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 761,340
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—548 **13 Claims**

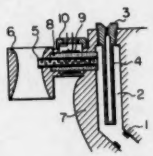


1. A method of treating the output stream of the carburetor of an internal combustion engine prior to introducing the same into the intake manifold of the engine so as to obtain a stream approaching equilibrium that is essentially liquid free and of substantially saturation composition, said method comprising the step of imparting angular momentum to the carburetor output stream and centrifuging vaporizable liquid droplets entrained therein against a surrounding shell solely by directing such stream into a spiral passageway defined in part by the surrounding shell and a partition wall disposed between and providing fluid separation between adjacent convolutions of the passageway, whereby the stream travels a spiral path having an axial component in one direction within the confines of the surrounding shell, the step of thereafter directing the stream exiting from the spiral passageway to the intake manifold along an exiting path that is radially within, separated from and having an axial component in a direction opposite to that of the spiral path, and the step of heating the exterior of the surrounding shell an amount approximately sufficient to vaporize all the liquid droplets centrifuged thereagainst, whereby angular momentum is initially imparted to the stream solely by reaction of the stream against the heated surrounding shell to the end that entrained liquid droplets impinge substantially solely upon a heated surface with impingement upon and coalescence of liquid droplets upon a relatively cool surface being thereby substantially avoided.

4,212,275
CARBURETOR

Mitsumasa Inoue, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 1, 1977, Ser. No. 847,611
Claims priority, application Japan, Nov. 5, 1976, 51-132459
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—549 5 Claims



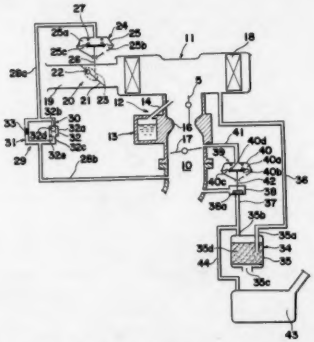
1. In an internal combustion engine having an induction system: an air-fuel mixture forming means and an, induction passage leading to said internal combustion engine; and means disposed within said air-fuel mixture forming means and said induction passage for adsorbing a portion of the fuel fed to said internal combustion engine in an unvaporized state and reintroducing said portion into said induction passage in a vaporized state, said means taking the form of

a porous ceramic body made of an electrically conductive material having a positive temperature coefficient and an apertured metal member disposed in said induction passage in contact with said porous ceramic body, which apertured metal member serves as one of two electrical contacts of said porous ceramic body and which apertured metal member further serves to receive said vaporized fuel through said apertures to mix the same with the air-fuel mixture passing through the induction passage.

4,212,276
AUTOMOBILE EVAPORATIVE EMISSION CONTROL DEVICE

Yoshihisa Kaneda, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jan. 19, 1979, Ser. No. 5,014
Claims priority, application Japan, Jan. 30, 1978, 53-10563[U]
Int. Cl.[2] F02M *33/02, 37/00*
U.S. Cl. 123—516 8 Claims



1. In combination with an internal combustion engine having an intake manifold leading to at least one combustion chamber and including a carburetor having a throttle valve disposed in the intake manifold for combining fuel from a fuel tank with primary air to form a combustible mixture to be supplied into the combustion chamber, an evaporative emission control device which comprises:

an air cleaner housing, the interior of which is fluid connected to one end of the intake manifold remote from the combustion chamber, said air cleaner housing having a primary air intake duct communicating the interior of the air cleaner housing to the atmosphere;

a gating valve means disposed in said primary air intake duct and operable to selectively close and open the primary air intake duct;

a first diaphragm valve assembly having a compartment divided into first and second working chambers by a diaphragm member, said second working chamber being in communication with the atmosphere and said diaphragm member being operatively connected to said gating valve means and displaceable between a first position, in which the gating valve means is held in position to close the primary air intake duct, and a second position in which the gating valve means is held in position to open the primary air intake duct;

a first fluid passage means extending between the first working chamber and the intake manifold and through which air contained in the first working chamber is drawn into the intake manifold, when a negative pressure is developed in the intake manifold, to create a negative pressure in the first working chamber to displace the diaphragm member towards the second position;

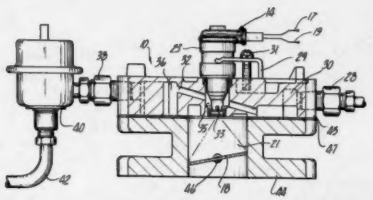
means disposed on said first fluid passage means and operable, when the negative pressure in the intake manifold decreases, for delaying a corresponding decrease of the negative pressure in the first working chamber for a predetermined time to maintain the gating valve means in the opened position; and

a purifying unit for collecting fuel vapors resulting from evaporation of fuel in an engine fuel system during an inoperative condition of the engine with no negative pressure developed in the intake manifold.

4,212,277
ECONOMY THROTTLE BODY FOR HOT FUEL HANDLING

Angelo R. Melotti, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 6, 1978, Ser. No. 883,553
Int. Cl.[2] F02M *39/00;* F02B *3/00;* B05B *1/30*
U.S. Cl. 123—434 11 Claims



1. A throttle body for attachment to a manifold of an internal combustion engine, said throttle body comprising:

an upper throttle body member having integral fuel passages for the delivery of pressurized fuel to at least one air induction bore disposed therethrough and means for mounting a fuel injector in the air flow path of that bore, said fuel injector operable to meter said pressurized fuel from said fuel passages;

a lower throttle body member, adapted to mount between said upper throttle body and the manifold of the internal combustion engine, having said bore further disposed therethrough and including a throttle means located in said bore to control the amount of air flow thereghrough; and

a thermal barrier separating said upper member from said lower member to prevent substantial thermal energy from reaching the fuel passages of the upper member from the manifold and thereby causing hot fuel handling problems.

4,212,278
SAFETY DEVICE FOR DIESEL ENGINES

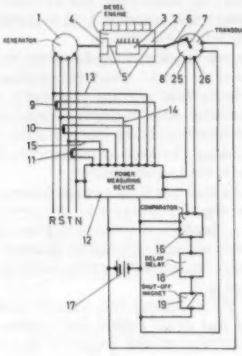
Norbert Eisinger, Mannheim; Paul Wesch, Ilvesheim, and Matthias Dzsida, Mannheim, all of Fed. Rep. of Germany, assignors to Motoren-Werke Mannheim AG, Mannheim, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 928,075

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734215

Int. Cl.[2] F02B *77/08*

U.S. Cl. 123—319 **10 Claims**



1. A safety device for a diesel engine and responding to an abnormal change of ratio of useful torque delivered by said diesel engine to fuel quantity per power stroke, said fuel quantity per power stroke being defined by position of an injection pump control rod, said safety device comprising: transducer means converting control rod displacement into a control signal which is at least substantially proportional to said fuel quantity per power stroke; correcting means; and crank drive means for converting control rod displacement into a rotation of said correcting means.

4,212,279
ELECTRONIC-MECHANICAL GOVERNOR FOR DIESEL ENGINES

Yoshio Ohtani, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,498

Claims priority, application Japan, Jul. 15, 1977, 52-84043

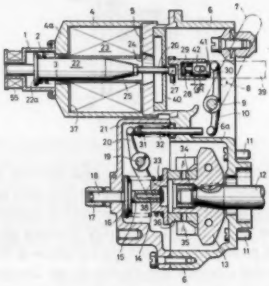
Int. Cl.[3] F02M *59/20*

U.S. Cl. 123—352 **8 Claims**

1. A governor system for a diesel engine, the engine having an accelerator and a fuel-injection pump which has a fuel control rack, the governor system comprising:

a centrifugal governing means for an upper speed range of the engine, said centrifugal governing means having flyweights displaceable as a function of engine r.p.m. and a shifter movable in response to a displacement of the flyweights;

an electronic governing means for a lower speed range of the engine, comprising an electromagnetic actuator including an electromagnetic coil, a plunger displaceable in response to the magnetic force of said coil and having a tapered end, a magnetic pole member having an aperture of a conical section corresponding to said tapered end of said plunger for passing said plunger therethrough, and means for permanently urging said plunger in a direction opposite to said magnetic pole member against the magnetic force of said coil; and an electronic control circuit means for driving said electromagnetic actuator, comprising means for generating signals individually representing an amount of operation of said accelerator provided in the engine, an engine speed and a position of said plunger, and an amplifier coupled to said signal generating means for supplying a control signal based upon said generated signals to said electromagnetic coil to actuate the same; a



first coupling means permanently coupling said plunger with said fuel control rack of said fuel-injection pump; and

a second coupling means adapted to connect said shifter of said centrifugal governing means with said control rack to transmit a displacement of said flyweights thereto when the engine speed has exceeded a predetermined speed in said upper speed range of the engine, and to keep said shifter disengaged from said control rack below said predetermined speed.

4,212,280
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

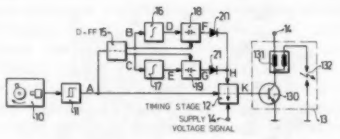
Jürgen Fresow, Schwieberdingen, and Bert Wurst, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,577

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2700676

Int. Cl.[2] F02P *1/00*

U.S. Cl. 123—611 **8 Claims**



1. Ignition system for an internal combustion engine having an ignition coil **(131)**;

a controlled switch **(130)** serially connected with the primary of the ignition coil **(131)** and controlling the commencement and interruption of current flow therethrough;

a control signal source **(10, 11)** coupled for rotation with the engine and providing ignition control pulses to determine the opening instant of said controlled switch **(130)** and hence determining the ignition instant of said system;

a timing circuit **(12)** connected to and controlling the time instant of connection of the controlled switch **(130)** for said current flow therethrough and through the ignition coil;

connection timing control means (16, 18, 20; 17, 19, 21) responsive to the recurrence rate of ignition pulses providing a control signal representative of said recurrence rate, and hence speed of the engine, connected to and controlling the timing circuit (12) to thereby control the time instant of connection of the controlled switch (130) subsequent to a prior opening thereof as a function of engine speed including

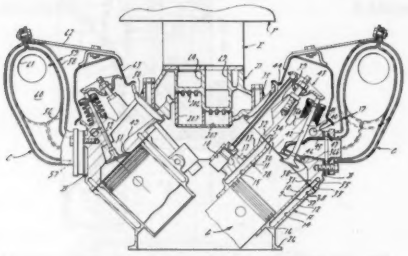
an integrator means (16, 17) integrating during the time of subsequent recurrent ignition pulses, and providing said control signal as a function of the integration time to said timing circuit, the timing circuit commanding closing after a prior opening at time instants which variably follow said prior opening as the recurrence rate of said ignition pulses changes, to maintain the closed or ON-time of said controlled switch (130) essentially constant as the speed of the engine varies;

and further including a memory means connected to the integrator means and storing a signal representative of the integrated value integrated by said integrator means over the time between successive pulses, the memory being connected to said timing circuit to control timing interval thereof.

4,212,281
LOW WEIGHT RECIPROCATING ENGINE

Robert P. Ernest, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 753,347, Dec. 22, 1976, Pat. No. 4,136,648. This application Aug. 14, 1978, Ser. No. 933,340
Int. Cl.[2] F02B *75/22*
U.S. Cl. 123—193 H **4 Claims**



1. A head for an internal combustion engine, comprising:

(a) a one piece integral casting comprised of a nonallotropic metal having a thermal conductivity of at least 0.25 cal./cm²/cm/sec./° C. and less than 5% alloying ingredients, said casting having a flat deck bottom and walls defining a plurality of aligned cylinder roofs extending upwardly from said deck, said casting further having walls defining a plurality of intake and exhaust passages extending through certain of said roof walls, and said casting further having walls defining valve guide cylinders associated with each exhaust intake passage,

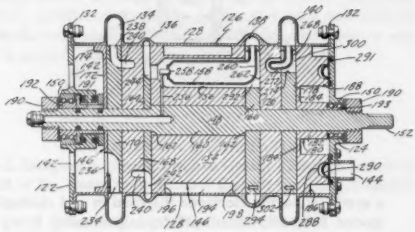
(b) means defining limited channels for cooling fluid to flow in one path in series along the sides of each of said roof walls and in another path in series past each of said valve guide cylinders, said channels opening upon said deck substantially along their entire length, and

(c) each cylinder wall having an integral non-allotropic metal alloy rich zone extending along at least the exposed surface of said valve guide cylinder, said alloy rich zone being comprised of an alloy mixture having ingredients selected from the group consisting of silicon, copper, nickel, carbon, tungsten, molybdenum, zirconium, vanadium, magnesium, zinc, chromium, cobalt, manganese and titanium, the remainder being said non-allotropic metal.

4,212,282
POSITIVE DISPLACEMENT, CONTINUOUS COMBUSTION ROTARY ENGINE

Agaton P. Apanovitch, 1060 Poquonock Ave., Windsor, Conn. 06095

Filed Sep. 19, 1978, Ser. No. 943,701
Int. Cl.[3] F01C *1/00*; F02B *53/00*
U.S. Cl. 123—204 **21 Claims**



1. A rotary device constituting a pump or motor and including:

a casing having an annular groove on its inner surface forming a gas path;

end caps on the casing having inlet and outlet openings, one in each cap;

a rotor within the casing and journalled in the caps and having a projecting piston thereon to fit within the annular groove and to move therein as the rotor turns; said rotor being shorter than the casing to define inlet and outlet chambers at opposite ends of the rotor;

said rotor having inlet and outlet passages therein, each passage extending from one end wall of the rotor and terminating in the periphery of the rotor to communicate with said groove, said inlet and outlet passages being adjacent to and on opposite sides of the piston; and connecting with said inlet and outlet chambers;

at least two valves axially movable in the casing and positioned to extend across and close said annular groove, each of said valves having an opening therein comparable in dimension to the piston for the piston to pass therethrough; and each valve having axially spaced inwardly extending projections located in said chambers; and

cam means on each end of the rotor adjacent the projections and acting on the projections to move the valves axially to align the opening therein with the annular groove as the piston approaches the valves and to close the groove after the piston passes the valves; said cam means being located in said chambers.

4,212,283
ROTARY ENGINE

Ong S. Hoo, 3-17-21, Koishikawa Bunkyo-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 542,681, Jan. 20, 1975, abandoned. This application May 2, 1977, Ser. No. 792,551
Claims priority, application Japan, Jan. 25, 1974, 49-11271
Int. Cl.[2] F02B *53/12*
U.S. Cl. 123—210 **3 Claims**

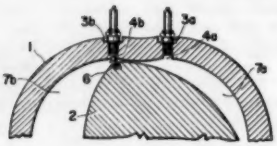
1. A rotary internal combustion engine, comprising:

a wall structure defining a combustion chamber, having means for supplying an air-fuel mixture to the chamber and for withdrawing products of combustion from the chamber, the chamber having a trochoidal inner surface;

a substantially triangular rotor having a power output shaft eccentrically secured thereto, the shaft being mounted centrally in and extending from the chamber, the rotor having three apex edges in contact with said inner surface so that on combustion of the air-fuel mixture in the chamber, the rotor performs a planetary motion in a direction

along said inner surface, with the apex edges sliding along the surface; and

an ignition system, comprising, a plug channel extending through the wall, located at a position before a pressure turning point having a restricted opening in the trochoidal inner surface, and an ignition spark plug structure having



a spark-producing electrode disposed in said channel and spaced from said inner surface, said opening being narrower in said direction than in a direction parallel to the shaft,

whereby combustion of the air-fuel mixture in the chamber is facilitated.

4,212,284

PNEUMATICALLY-OPERATED BALL PROJECTING DEVICE

Richard Speer, Oak Hall, Ware Neck, Va. 23178

Continuation-in-part of Ser. No. 764,197, Jan. 31, 1977, Pat. No. 4,094,294. This application Apr. 6, 1978, Ser. No. 894,162

Int. Cl.[2] F41F *1/04*

U.S. Cl. 124—56 **29 Claims**

1. In a pneumatic device for projecting a ball, the device comprising a ball-directing tube defining a generally tubular inner space; gas pressure supply means operatively connected to a first end of the tube to provide gas under pressure thereto; means for feeding a ball into the tube for movement along the tubular inner space in a direction from the first end of the tube toward the second end of the tube; and detent means in the tube for transiently restraining the movement of a ball therethrough, the improvement comprising providing a pneumatically operated detent means, the detent means comprises:

an inflatable member within said tube, the member having a first inflated configuration extending into the tubular inner space, defining a substantially pressure-tight detent volume, so as to constrict the tubular inner space and thus restrain the movement of a ball therealong, and a second, deflated configuration, permitting the movement of a ball along the tubular inner space;

a pressure chamber, the gas pressure in such pressure chamber being increased when a ball is in place in the tubular inner space and is restrained by the detent member in the inflated configuration, while gas under pressure is being provided to the first end of the tube;

pressure valve means between the detent volume, and the pressure chamber;

pressure bias means operatively connected to the pressure valve means to bias the pressure valve means towards an open position;

a first pressure-responsive member operatively connected to the pressure valve means and acting against the bias means, tending to move the pressure valve means towards a closed position;

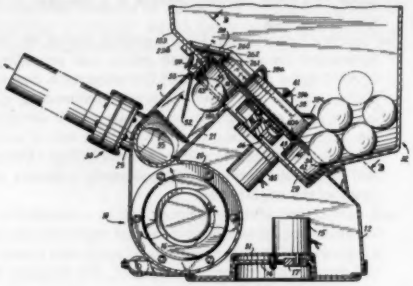
exhaust valve means between the detent volume and atmosphere;

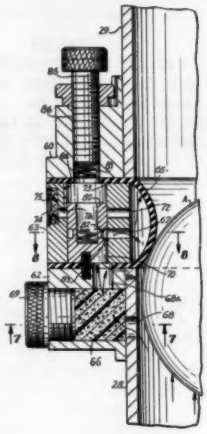
exhaust bias means operatively connected to the exhaust valve means to bias the exhaust valve means towards a closed position;

a second pressure-responsive member operatively connected to the exhaust valve means and acting against the exhaust bias means, tending to move the exhaust valve means towards an open position; and

pressure-connecting means between the pressure-responsive members and the pressure chamber;

whereby at a predetermined pressure in the pressure chamber, the pressure valve means is moved into the closed position, and the exhaust valve means is moved into the open position, so as to substantially immediately permit the deflation of the inflatable member when a ball is pressed thereagainst and permit passage of the ball along the tubular inner space.





4,212,285

DART GUN AND DART THEREFOR

Bernard J. Cagan, Los Angeles, and Kenneth L. McQuary, Hermosa Beach, both of Calif., assignors to Placo Products Company, Torrance, Calif.

Filed Jan. 31, 1978, Ser. No. 874,032

Int. Cl.[2] F41B *11/00*

U.S. Cl. 124—67 **4 Claims**

1. In an air operated dart gun, the combination of:

(a) an air cylinder;

(b) a dart barrel connected to said cylinder;

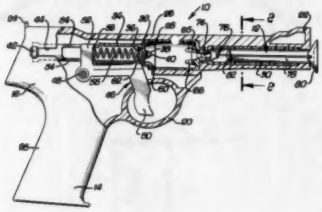
(c) a piston in said cylinder;

(d) means for propelling said piston in said cylinder toward said dart barrel to displace air under pressure from said dart barrel;

(e) a one-piece dart comprising a shaft having a forward end provided with an integral, circular suction cup larger than said shaft and having a rearward end insertable into said dart barrel and provided with an integral propelling ele-

ment larger than said shaft and complementary to said dart barrel;

(f) barrier means for positively preventing physical contact between said piston and said propelling element of said dart, and for making physical contact between said piston and a foreign object in said dart barrel virtually impossible; and



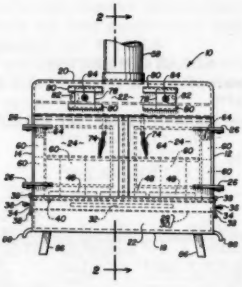
(g) serpentine shaped air passage means connecting said cylinder to said dart barrel and having a laterally offset portion bypassing said barrier means and making insertion of a foreign object around said barrier means into contact with said piston virtually impossible.

4,212,286

SHEET METAL FIREPLACE TYPE STOVE

Robert K. Shane, 587 W. Market St., York, Pa. 17404, and Glenn E. White, R.D. 4 Pine St., Dillsburg, Pa. 17019

Filed Dec. 1, 1978, Ser. No. 965,619
Int. Cl.[2] F24C 1/14
U.S. Cl. 126—77 **6 Claims**



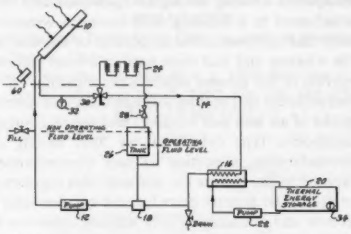
1. A sheet metal stove for burning logs and other types of wood fuel comprising in combination, a rectangular metal shell including opposite sides, a back, a top, and a bottom supported upon legs to space the same from a supporting surface, a plurality of parallel-spaced air inlet tubes extending between opposite sides of said shell fixed at the ends to air inlet holes in said sides which are spaced above the bottom of the shell to provide an ash-receiving space, a grate frame of similar area as said bottom and supported upon said tubes, said grate frame supporting a plurality of firebricks spaced short distances apart to permit passage of combustion air therethrough to a combustion zone above said bricks, manually adjustable dampers adjustably movable relative to the opposite ends of said tubes exteriorly of the sides of said shell to regulate incoming ambient air for combustion and said tubes having air discharge openings intermediately of the ends thereof to provide air by convection for combustion to rise through said spaces between the edges of said firebricks upon said frame to fuel when supported thereon, a metal deflector plate extending between the sides of said shell and extending upwardly and outwardly from the rear wall of said shell toward the front thereof, the lower edge of said deflector being spaced a limited distance above the inner edge of said grate and the upper edge being spaced from the top of said shell and from the front suitable distances to provide discharge of combustion products to a flue opening in said top of said shell, front door means hinged to the front of said shell and covering a front opening when closed, additional manually-operable damper means in said front above said front door means regulatable relative to said damper means for the ends of said tubes to control the combustion of fuel and effect economy thereof by extending the burning thereof, additional firebricks positioned vertically across said back and ends of said shell, and means attached to said back and ends of said shell to support said additional firebricks.

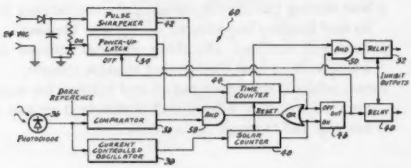
4,212,287

INSOLATION INTEGRATOR

John J. Dougherty, Norristown, and George T. Rudge, Lansdale, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Aug. 24, 1978, Ser. No. 936,626
Int. Cl.[2] F24J 3/02; H01L 31/00; H01J 39/12
U.S. Cl. 126—419 **4 Claims**





1. In a solar collector system wherein a fluid is circulated through a solar energy collector by a fluid impeller, a control arrangement comprising:

insolation detector means for producing an insolation signal, the magnitude of which is proportional to the rate of the insolation;

first pulse producing means for producing first pulses at a frequency proportional to the magnitude of said insolation signal;

first counter means connected to receive said first pulses and to produce an output when its capacity is reached;

second pulse producing means for producing second pulses at a fixed rate;

second counter means connected to receive said second pulses and to produce an output when its capacity is reached;

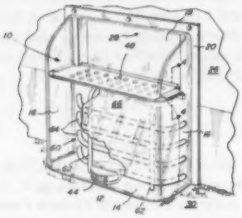
said first and second counter means being connected to be reset upon receiving the output pulse from either said first or second counter means; and

actuating means responsive to an output from said first counter means to turn on said fluid impeller and responsive to an output from said second counter means to turn off said fluid impeller.

4,212,288
WINDOW-MOUNTED SOLAR HEATING AND HUMIDIFYING DEVICE

Vincent B. Lipinski, P.O. Box 41, Chaska, Minn. 55318

Filed Jun. 7, 1978, Ser. No. 913,509
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—428 7 Claims



1. A solar heating and humidifying device for heating a building through a window, the device comprising:

a transparent housing having an open back and bottom for attachment to a building wall having a window therein such that said back covers a portion of the wall including the window and said open bottom covers and encloses a portion of the ground adjacent the building,

means adjacent said bottom for regulating and restricting the intake of air into said housing, said means comprising, an automotive type cylindrical air filter having an outer circumference, a portion of said circumference being exposed to the outside air, and said inlet regulating means comprises an arcuate door located adjacent said circumference and circumferentially slidable thereover between a first position uncovering said portion and allowing air flow through said filter and a second position covering said portion thereby preventing flow through said filter,

a heat-storing framework substantially conforming in shape to said housing and located within said housing,

a heat and moisture absorbing material located on said framework in heat-transferring relation thereto,

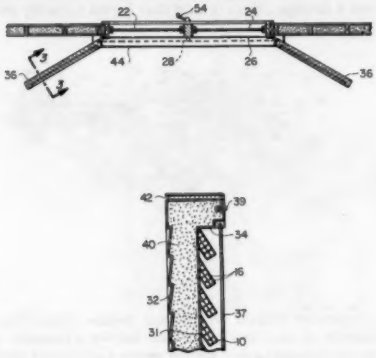
means adjacent the upper end of said housing for regulating the outlet flow of heated and moisturized air out of said housing and through the window.

4,212,289
SOLAR SHUTTER OR BLIND SYSTEM FOR WINDOWS

Raymond T. Hebert, P.O. Box 134, Saratoga, Calif. 95070

Filed Aug. 24, 1978, Ser. No. 936,374
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—428 5 Claims

1. A solar shutter system adapted to be exteriorly mounted adjacent a building window comprising a plurality of vanes each said vane having a plurality of elongate channels formed therein, a phase change material disposed and sealed within each of said channels, said phase change material selected to have a solid to liquid transition slightly above desired building temperature and a high heat of fusion associated with said transition, means for mounting said vanes in a spaced parallel array with the elongate dimension thereof horizontal to form a generally planar shutter array approximately the same size as the associated window, means for mounting said shutter for pivotal movement toward and away from the associated window from a position immediately adjacent thereto so that the sides of the vanes exposed when the shutter is fully opened are reversed upon closure to face inwardly toward said window space when the same is closed over the window, and insulation means disposed on the rear side of said planar array so that whenever the shutter is closed heat loss through the window

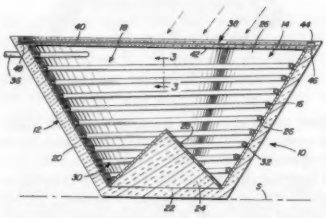


and from the vanes to the outside is minimized while heat is being delivered to the building.

4,212,290
SOLAR COLLECTOR

Warren L. Warnken, R.R. #2, Box 316 13225 Cheyenne Ct., Pine, Colo. 80470

Filed Mar. 6, 1978, Ser. No. 884,626
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—438 8 Claims



1. A solar collector, comprising, in combination:

(a) a body member provided with an upwardly opening recess, said recess having a frust-conical inner surface;

(b) heat exchanger means arranged on the surface for receiving radiation and heating a fluid medium contained in the heat exchanger means;

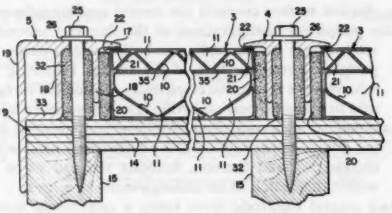
(c) reflector means arranged in the recess for distributing impinging solar radiation to the heat exchanger means;

said reflector means comprising a conical surface formed in a bottom portion of the recess and arranged converging to a point upwardly toward the opening of the recess, said conical surface being reflective to reflect impinging radiation evenly onto the inner surface of said recess and said heat exchanger means.

4,212,291
BATTEN FOR MOUNTING A UNITARY SOLAR COLLECTOR PANEL

Robert A. Erb, Valley Forge, Pa., assignor to The Franklin Institute, Philadelphia, Pa.

Continuation-in-part of Ser. No. 645,648, Dec. 31, 1975, Pat. No. 4,114,597. This application Aug. 3, 1978, Ser. No. 930,796
Int. Cl.[2] F24J *3/02*; E04C *1/34*
U.S. Cl. 126—445 27 Claims



5. A batten which retains juxtaposed unitary, coextruded, synthetic thermoplastic solar collector panels to a structure for assembly of a solar thermal energy collector system thereon, which batten comprises

a substantially horizontal retention member adapted to extend over and engage a top portion of the juxtaposed collector panels which are adjacent to the batten;

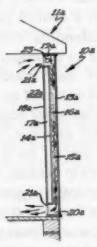
a pair of leg members in contact with the retention member, which, in cooperation with the retention member, are adapted to engage the sides of adjacent collector panels and to mount the collector panels onto the structure while allowing for thermal expansion of the collector panels in a lengthwise and crosswise direction and to minimize bowing of the collector panels out of their normally planar configuration; and

a compressible pad positioned between at least one of the leg members and the outer edge of the nearest adjacent collector panel.

4,212,292
SOLAR COLLECTOR

Charles P. Reinert, Garvin, Minn., assignor to Solarein, Inc., Buffalo, Minn.

Continuation-in-part of Ser. No. 806,905, Jun. 15, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 958,352
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—449 12 Claims



1. A solar collector for collecting solar energy in combination with a building having a wall structure including a wall element comprising:

a light transmissive member mounted on said wall and adapted to receive solar heat energy therethrough;

said light transmissive member defining a central plane and being disposed in spaced relation with respect to said wall element and cooperating with the latter to define a chamber therebetween,

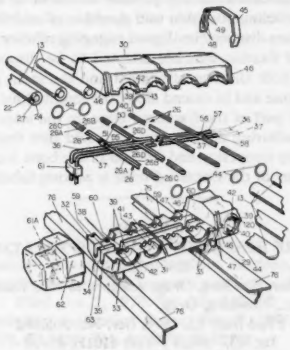
a heat absorber comprising a fibrous, porous mat substantially filling the volumetric space defining said chamber, said mat having a thickness dimension generally perpendicular to the light transmissive member and a longitudinal dimension generally parallel to the central plane, and said mat absorbing solar heat transmitted through said light transmissive member, said fibrous mat being substantially uniform in density and having an overall density within the range of 0.12 td_f and 0.8 td_f, where t is the fiber thickness and d_f is the density of the material comprising the fiber,

an inlet and an outlet for said chamber spaced apart in direction along the longitudinal dimension of the mat through which air is directed to be circulated through the porous fibrous mat fibers whereby the air will be heated by surface contact with the fibers as the air is circulated therethrough.

4,212,293
MODULAR TUBULAR SOLAR ENERGY COLLECTOR APPARATUS

Duane C. Nugent, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 737,364, Nov. 1, 1976, Pat. No. 4,120,285. This application Apr. 7, 1978, Ser. No. 894,315
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—450 7 Claims



1. A manifold apparatus for plural tubular solar energy collectors comprising a complementary pair of longitudinally split, mating and complementary elongated manifold members each comprised of a low density cellular insulating material and having a cavity means defined therein, the split pair of said members when juxtaposed in assembled position providing (1) plural apertures extending laterally into the manifold for receiving said tubular solar collectors in an external laterally dependent relationship therewith, (2) a cavity means housing metal fluid conduit elements for circulating a heat exchange fluid through said tubular collectors, said conduit elements extending transversely and longitudinally along the manifold, said cavity means aligned with and extending into an aperture of the manifold, and (3) a skin layer of a fiberglas reinforced polymeric thermosetting material over the exterior surface of said split, complementary manifold members, said skin layer including plural aperture forming flanges and a grommet gasket in each said flange for annularly, sealingly engaging said tubular solar collectors, and marginal overlapping, mating portions along an overlapping perimeter seam line, thereby covering the insulation at the mating seam line of said complementary split pair of said members.

4,212,294
ORTHOPEDIC FRACTURE FIXATION DEVICE

Frank P. Murphy, 5727 Stratford Lane, Lakeland, Fla.

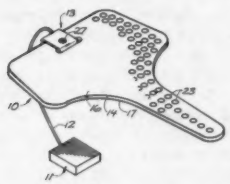
Filed Mar. 15, 1979, Ser. No. 20,806
Int. Cl.[3] A61B 17/18; A61F 5/04
U.S. Cl. 128—92 BC 5 Claims

1. An orthopedic fixation device primarily designed to accomplish a three point fixation of a bone fragment relative to a main part of a fractured bone and comprising in combination: a first fixation member being substantially rigid and including an internally threaded aperture formed therein intermediate its opposite ends, and having a head at a proximal end thereof, said first fixation member further including an externally threaded surface portion formed on an exterior surface of said first fixation member between said internally threaded aperture and the distal end of said first fixation member, said externally threaded surface portion being adapted to be disposed to securely engage a predetermined portion of the main part of the fractured bone, whereby said first fixation member is adapted to be mounted on the interior of the main part of the fractured bone; a second fixation member comprising an elongated, substantially flexible pin having an externally threaded surface portion extending along a predetermined portion of the length thereof, said pin having a transverse dimension along said externally threaded surface portion sufficient to accomplish threaded attachment within said aperture of said first fixation member when disposed in aligned engaging relation therewith, said second fixation member adapted to be disposed on the interior of both the bone fragment and the main part of the fractured bone and to extend along the longitudinal dimension of the main part of the fractured bone on the interior thereof and into anchoring engagement with said first fixation member, whereby inspection and fixation of the bone fragment and the main part of the fractured bone is accomplished.

4,212,295
MOISTURE RESPONSIVE PAD FOR TREATMENT OF ENURESIS

Joe W. Snyder, Newberg, Oreg., assignor to Nite Train-R Enterprises, Inc., Newberg, Oreg.

Filed May 12, 1978, Ser. No. 905,192
Int. Cl.[2] A61B 19/00; H01H 29/00
U.S. Cl. 128—138 A 3 Claims



1. A moisture responsive pad for signaling involuntary emission of droplets of urine when worn by a user and used in combination with an electrically activated signaling apparatus, comprising:

a central insulating layer formed as a sheet of flexible, nonabsorbent closed cell elastomeric foam material having a constant thickness between oppositely facing parallel surfaces, the central layer being compressible and electrically nonconductive;

first and second electrode layers each comprising a continuous sheet of flexible nonabsorbent liquid impervious material having an electrically conductive surface;

said first electrode layer being bonded to a first surface of said central layer;

said first electrode layer and said central insulating layer having a plurality of discrete open apertures formed therethrough in corresponding registration with one another;

said apertures having diameters less than the thickness of the central insulating layer;

said second electrode layer being bonded to the remaining surface of said central insulating layer such that the conductive surface contacts the central insulating layer;

the peripheral configurations of the first and second electrode layers corresponding in both size and shape to the peripheral configuration of the central insulating layer, whereby the respective electrically conductive surfaces of said first and second electrode layers are spaced apart;

said pad having a contoured peripheral configuration including a wide upper section and a protruding narrow lower section centered thereon, enabling the pad to be fitted within the crotch of an undergarment by a user;

said second electrode layer being a continuous noninterrupted sheet of material sealing off the apertures of said center insulating layer along said remaining surface thereof; and

wherein the walls of the open apertures of the central closed cell elastomeric foam insulating layer have uniformly roughened surfaces extending between the electrode layers which assist in spreading the droplets of urine across the thickness of the insulating layer to provide an electrically conductive path between the first and second electrode layers.

4,212,296
BANDAGE WITH PROTECTIVE MEMBER

Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 20, 1978, Ser. No. 898,003
Int. Cl.[2] A61L 15/00
U.S. Cl. 128—156 6 Claims

1. A bandage comprising:

a tape strip having a back surface, a front surface, adhesive on said front surface, a central portion, and a pair of opposed end portions extending from said central portion for securing the bandage to a patient;

a protective member of foam material having a central region of enlarged thickness and an edge area tapering from said central region to an outer edge extending peripherally around the protective member, said protective member having a generally convex back surface secured to the front surface of said strip central portion with said protective member edge generally aligned with the front surface of said strip end portions, and said protective member having a generally concave front surface defining a cavity facing away from said strip central portion; and

an absorbent pad having a central region of enlarged thickness and an edge area tapering from the pad central region toward an outer edge extending peripherally around the pad, said pad having a generally convex back surface secured to the front surface of the protective member with said pad received in and substantially filling said cavity, said outer edge of the pad being located adjacent the outer edge of the protective member, and said pad having a

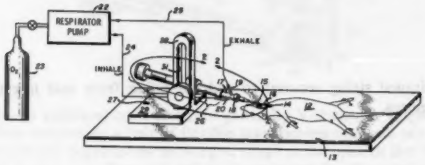
generally planar front surface generally aligned with the front surface of said strip end portions.

4,212,297

MICRO-FLUID EXCHANGE COUPLING APPARATUS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John E. Johnson, Jr., Baltimore, Md., and Paul F. Swartz, San Carlos, Calif.

Filed Oct. 16, 1978, Ser. No. 951,422
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.14 **1 Claim**



1. In a micro-fluid exchange apparatus for exchanging fluid within an organ of a small animal such as a rat or mouse via the intermediary of a hollow needle for penetrating a fluid conduit of the small animal for connecting the hollow needle in fluid exchanging relation with the fluid conduit such as a trachea or blood vessel of the small animal;

plenum means comprising a chamber having inlet and outlet port means for connection in fluid communication with the hollow needle for passage of fluid therethrough into and out of the fluid conduit of the small animal via the intermediary of the hollow needle;

pedestal means for pivotably holding the hollow needle at any one of a selected number of angles of inclination relative to a reference base support to which the small animal is to be held during the procedure;

translating means for translating the hollow needle into the fluid conduit of the small animal or along the longitudinal axis of the elongated hollow needle;

said translating means including an elongated hollow sleeve adapted to be secured to said pedestal means, a drive rod axially translatable within said sleeve means, key means for keying said drive rod means to said sleeve means to allow axial translation therewithin without substantial rotation therebetween;

means for coupling the hollow needle and said plenum means to said drive rod for axial translation therewith;

said sleeve means including a threaded portion;

rotatable drive means having a threaded portion for mating with said threaded portion of said sleeve means for axial translation within said sleeve means for effecting relative rotation between said sleeve means and said rotatable drive means;

means for coupling said rotatable drive means to said drive rod; and

readout means coupled to said drive rod for axial translation therewith for reading out the axial position of said drive rod relative to said sleeve means.

4,212,298

THERMODILUTION INJECTOR

Walter A. Gezari, Killingworth, Conn., assignor to Hart Associates, Inc., East Hartford, Conn.

Continuation-in-part of Ser. No. 735,340, Oct. 26, 1976, abandoned. This application Oct. 20, 1977, Ser. No. 843,333
Int. Cl.² A61M *5/00*
U.S. Cl. 128—215 **23 Claims**

1. An injector for delivering injectate to a patient including:

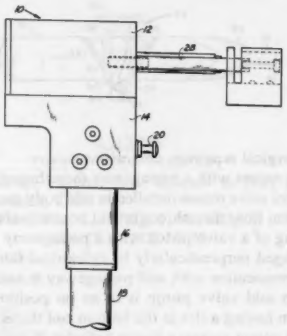
a body;

support means on said body for receiving a syringe;

actuator means in said body responsive to pressurized fluid to actuate said syringe, said actuator means having a movable output member;

connecting means for connecting said actuator means output member to a syringe in said support means;

a source of pressurized fluid for said actuator means, said source of pressurized fluid being internally contained in said body;



regulating means in said body for maintaining at a substantially constant level the pressure of pressurized fluid delivered from said pressurized fluid source in said body to said actuator means whereby said actuator means output member will move at a substantially constant rate; and

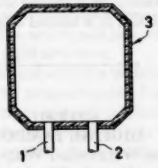
control means in said body for controlling delivery of the pressurized fluid to said actuator means.

4,212,299

CONTAINER BAG

Shyoji Yokokoji, Sayama, and Kazuhisa Hoshino, Ichikawa, both of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Jun. 2, 1978, Ser. No. 912,082
Claims priority, application Japan, Jun. 7, 1977, 52-67041; Jan. 26, 1978, 53-7658; Feb. 6, 1978, 53-12101
Int. Cl.² A61J *1/00*; A61M *5/00*
U.S. Cl. 128—272 **5 Claims**

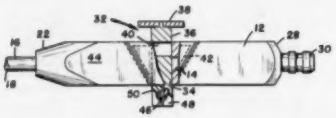


1. A container bag for preserving blood or its component materials at temperatures in the range of liquid nitrogen temperatures, which container bag comprises an inner layer of ethylene-tetrafluoroethylene copolymer, and an outer layer of a member selected from the group consisting of perfluoroalkoxy resin, polytetrafluoroethylene, and tetrafluoroethylene-hexafluoropropylene copolymer, said outer layer materials having melting points or thermal sticking points which are higher than those of said inner layer.

4,212,300
RUBBER BAND POWERED PISTON VALVE ASPIRATOR

Roy A. Meals, 10376 Keswick Ave., Los Angeles, Calif. 90064

Filed Feb. 6, 1978, Ser. No. 875,401
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—276 2 Claims



1. A surgical aspirator, comprising:

a body means with a passageway therethrough;

a control valve means installed in said body means to control suction flow therethrough, said control valve means consisting of a valve piston with a passageway therethrough arranged perpendicularly to cylindrical sides thereof for communication with said passageway in said body means when said valve piston is in an on position, said valve piston having a slot in the bottom end thereof for anchoring a power means, a piston cylinder in said body means, in which said valve piston is disposed, and so situated in said body means so that passageway through said valve piston may be aligned with said passageway in said body means, and a thumb button attached to top of said valve piston for depressing the valve piston;

a probe means connected to one end of said body means, the interior passageway of said probe means communicating with the interior passageway through said body means, said probe means having a tip on the end thereof, said tip having at least one entry port therein, said entry port communicating with the interior passageway of said probe means;

a male connection means connected to one end of said body means opposite to end to which said probe means is connected, the interior of said male connection means communicating with the interior passageway of said body means, with a vacuum or suction system connected to said male connection; and

a power means for operation of said control valve means, said power means being a rubber band, said rubber band power means being attached to said body means, said body means having a system of grooves on the exterior thereof in a configuration to mount said power means, said rubber band power means being attached to a first edge of said body means, then passing down a first side of said body means, passing through a slot in bottom of said valve piston, then passing up a second side of said body means, and being attached to a second edge of said body means.

4,212,301
DIGITAL TAMPON

Russell L. Johnson, Weyauwega, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

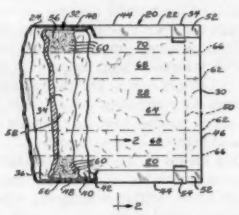
Filed Aug. 14, 1978, Ser. No. 933,165
Int. Cl.[2] A61F *13/20*
U.S. Cl. 128—285 15 Claims

1. A tampon of unitary construction comprised of a compressible absorbent material a lower portion of said material being compressed to provide a rigid insertion means for finger contact and support of soft outer shell during insertion, the remaining upper portion of said material being relatively uncompressed and being draped downwardly from the top of said insertion means to surround said insertion means and extend past the lower terminus of said insertion means to provide a downwardly-facing finger-receiving pocket, and a withdrawal string secured to and extending from said insertion means.

4,212,302
ABSORBENT ARTICLE WITH SPACED HYDROCOLLOID MATERIAL

Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 712,439, Aug. 9, 1976, abandoned. This application Dec. 22, 1977, Ser. No. 863,484
Int. Cl.[3] A61F *13/16*
U.S. Cl. 128—287 3 Claims



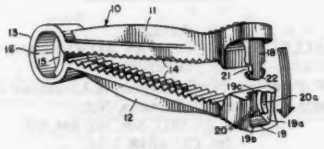
1. A disposable diaper comprising, an absorbent pad assembly having a pair of side edges, a pair of end edges connecting the side edges, a fluid pervious top sheet, a backing sheet of fluid impervious material, and an absorbent pad comprising a mass of fibers located intermediate said top and backing sheets and having a pair of opposed side edges located adjacent the side edges of the pad assembly, said pad assembly having a pair of longitudinal first fold lines defining a longitudinally extending central panel, and a pair of second longitudinal fold lines defining a pair of longitudinally extending first panels located intermediate the first and second fold lines and overlying the central panel, said second fold lines defining a pair of longitudinally extending outermost panels overlying the first panels and located intermediate the second fold lines and the side edges of the pad assembly, with the outermost panels including side margins of the pad, said pad assembly having a hydrocolloid material dispersed in fibers of the pad and positioned in longitudinal central regions of said opposed pad side margins, a pair of opposed pad end margins located adjacent said pair of opposed end edges of the pad assembly, said opposed pad end margins having a hydrocolloid material dispersed in fibers of the pad, with said central panel defining a fluid receiving region and being substantially free of hydrocolloid material, and said diaper having a pair of tape fasteners located adjacent said opposed side edges of the pad assembly and adjacent one of said end edges.

4,212,303

UMBILICAL CORD CLAMP

John L. Nolan, Glenview, Ill., assignor to Hollister Incorporated, Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,511
Int. Cl.[2] A61B *17/08*
U.S. Cl. 128—346 14 Claims



1. An umbilical cord clamp of generally V-shaped configuration comprising a pair of flexible arms having rear end portions joined together by an integral hinge at the apex of the V and having free forward end portions normally disposed in spaced-apart relation and being movable towards each other for clamping an umbilical cord between said arms, and locking means for securing said arms together when said clamp is closed, wherein the improvement comprises

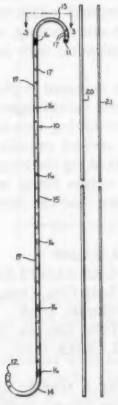
said locking means includes a flexible tongue at the forward end of one of said arms, said tongue projecting towards the other of said arms in the general direction of closing movement of said one arm, said other arm having a recess at its forward end for receiving said tongue and having a pair of transversely-spaced projections extending into said recess from opposite sides thereof, said tongue having a tip portion and said projections defining a pair of forwardly sloping ramp surfaces engagable with said tip portion for flexing the tongue forwardly as said arms are urged together, said tongue having a pair of lateral notches adjacent said tip portion for receiving said pair of projections when said tip portion has cleared said ramp surfaces and said clamp is fully closed.

4,212,304

URETHERAL CATHETER STENT

Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corp., Racine, Wis.

Filed Apr. 7, 1978, Ser. No. 894,278
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—349 R 14 Claims



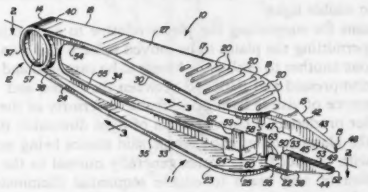
1. An ureteral catheter stent comprises an elongated relatively flexible tubular member having at least one drainage opening extending through a wall thereof, the end portions of said tubular member are in the form of hooks, at least one of which has a closed end and the tubular member includes indicating means which indicate when the end portion is forcibly straightened the direction the closed end hook will extend when the portion is allowed to resume its normal shape.

4,212,305

DISPOSABLE FORCEPS

Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Mar. 2, 1978, Ser. No. 882,676
Int. Cl.[3] A61B *17/30*
U.S. Cl. 128—354 2 Claims



1. In a forceps of the tweezer type fabricated of a plastic material and having integrally connected elements to provide a unitary structure, improvements therein comprising:

(a) a pair of opposed arms, each said arm including:

i. a substantially straight intermediate portion,

ii. a substantially straight rearward portion extending in one direction from said intermediate portion and having a terminal end, and

iii. a substantially straight forward portion extending in the other direction from said intermediate portion and having a terminal end,

said intermediate portions being substantially parallel and

said rearward portions being in converging relationship from said intermediate portions;

(b) a rigid structure connecting said rearward portions at the terminal ends thereof;

(c) a jaw carried by each said forward portion and having a face terminating in the nose;

(d) a generally central rib extending inwardly from each arm and connected at one end to said jaw and connected at the other end to said rigid structure,

(e) a generally cylindrical wall of a width substantially equal to the width of the terminal ends of said rearward portions, which portions extend substantially tangentially therefrom, said cylindrical wall further having an intermediate transverse partition which is substantially a continuation of said ribs, and

(f) a purchase area carried by each said intermediate portion nearer said forward portion than said rearward portion,

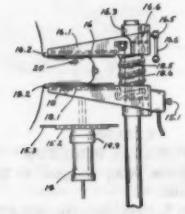
whereby, upon compressive force being applied to said purchase areas, arcuate bending moment occurs in said arms between said purchase areas and said rigid structure and said arms move, one toward the other, until the noses of said jaws abut, and whereupon continued application of said compressive force causes said arms to flex inwardly, substantially in the area of said intermediate section, until the faces of said jaws abut.

4,212,306

BREAST EXAMINATION DEVICE AND METHOD

Khalid Mahmud, 6601 Southcrest Dr., Minneapolis, Minn. 55435

Filed May 18, 1978, Ser. No. 907,001
Int. Cl.[2] A61B 6/08; G01N 33/16
U.S. Cl. 128—665 **16 Claims**



1. Apparatus for the examination of the female breast for tumors or the like, comprising a pair of spaced plates transparent to visible light;

means for supporting the plates relative to each other and permitting the plates to be moved toward and away from one another to enable the breast to be captured and gently compressed and flattened between the plates; and

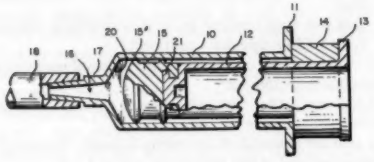
a source of visible light positionable exteriorly of the plates for producing a narrow beam of light directable through the plates and flattened breast, said source being movable with respect to the plates generally normal to the direction of said beam to enable sequential illumination of substantially the entire breast captured between the plates.

4,212,307

BLOOD SAMPLING SYRINGE

Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.

Continuation of Ser. No. 715,678, Aug. 19, 1976, abandoned, which is a continuation of Ser. No. 542,578, Jan. 20, 1975, abandoned. This application Jan. 12, 1978, Ser. No. 868,897
Int. Cl.[2] A61B 5/00
U.S. Cl. 128—763 **23 Claims**



23. A syringe, which comprises;

a cylindrical barrel having a first open end for receiving a plunger and a second open end adapted to mount a needle on the opening thereof; and

a plunger slidably mounted in said barrel, said plunger being withdrawable from said barrel through said first open end and said plunger comprising:

a. means for receiving a force to move said plunger in or out of said barrel,

b. an elastomeric plunger tip adapted to form a sliding seal with the inner walls of said barrel,

c. a shank joining said means to said plunger tip,

d. means for preventing the plunger tip from moving inwardly beyond a predetermined position to prevent the plunger tip from contacting said barrel second end, thereby avoiding compression of said plunger tip against said second open end by the inward movement of said plunger and thereby avoiding air from being sucked into said syringe barrel upon release of compression, and to provide a chamber defined by said second open end of said barrel and the lower end of said plunger tip when said plunger tip is in said predetermined position,

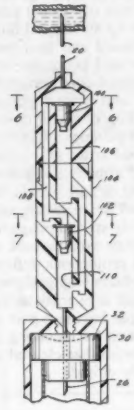
e. an inert fluid disposed in said barrel between the second open end thereof and said plunger tip, in a volume in excess of that required to fill said chamber and the bore of said needle.

4,212,308

PARALLEL-FLOW ONE-WAY BLOOD SAMPLING DEVICE

Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 27, 1977, Ser. No. 864,388
Int. Cl.[2] A61B 5/14
U.S. Cl. 128—766 **3 Claims**



1. A device for sampling a body fluid such as blood, comprising:

a housing having a forward end and a distal end;

a first cannula secured to the forward end of said housing for penetration of a fluid-containing vessel of a patient's body;

a second cannula secured to the distal end of said housing;

a first conduit within said housing, said conduit being in fluid communication with said first and second cannulas;

a first one-way valve mounted within said first conduit;

a second conduit within said housing, said second conduit being in fluid communication with said first and second cannulas; and

a second one-way valve mounted within said second conduit, said first and second valves capable of independently and simultaneously permitting downstream flow therethrough towards said second cannula, said valves being aligned with each other along the longitudinal axis of said housing, one of said valves being mounted nearer the distal end of the housing than the other.

4,212,309

BLOOD GAS SAMPLER

Harvey R. Moorehead, Salt Lake City, Utah, assignor to Ballard Medical Products, Inc., Midvale, Utah

Filed Sep. 28, 1978, Ser. No. 946,887
Int. Cl.[3] A61B 5/14
U.S. Cl. 128—766 **5 Claims**

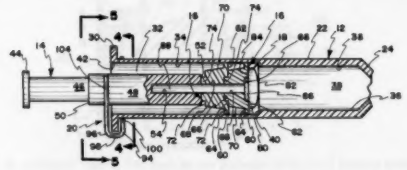
1. A method of obtaining a reliable blood specimen for analysis of gas characteristics using a syringe comprising the steps:

assembling the syringe by placing a plunger partially within

a barrel having a stepped bore so that a seal at the leading end of the plunger and unattached to the syringe barrel is not appreciably deformed by a larger trailing end barrel bore portion;

storing the syringe in the mentioned assembled state for an interval of time;

advancing the plunger further into the barrel causing the seal to engage and be sealingly deformed against but unattached to a smaller leading end barrel bore portion;



retracting the plunger solely by arterial blood pressure following penetration of an artery thereby aspirating a blood specimen into the barrel without seal leakage;

restricting seal displacement during aspiration to a length less than the length of the smaller leading barrel bore portion by engagement of external stop structure;

discharging the sample, by exertion of manual force for testing of the gas characteristics thereof.

4,212,310

UNITARY PACK OF SMOKING TOBACCO PRODUCTS CONTAINING POLYMERIC ALCOHOL FLAVORANT-RELEASE COMPOSITIONS

Thomas V. Van Auken, Richmond; Harvey J. Grubbs, Mechanicsville, and William R. Johnson, Jr., Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

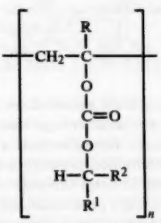
Filed Dec. 12, 1977, Ser. No. 859,712

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.[2] A24B *3/14, 3/12*

U.S. Cl. 131—17 R **6 Claims**

1. A unitary pack of smoking tobacco products which comprises at least one smoking tobacco product which contains an alcohol flavorant-release composition as hereinafter defined in a unitary pack with at least one smoking tobacco product which does not contain such alcohol flavorant-release composition, said alcohol flavorant-release composition being a polymeric composition having a molecular weight in the range between about 500 and 2,000,000 and consisting essentially of recurring monomer units corresponding to the formula:



wherein R is a member selected from the group consisting of aliphatic, alicyclic and aromatic hydrocarbon radicals containing between 1 and about 10 carbon atoms, R^1 and R^2 are members independently selected from the group consisting of hydrogen and aliphatic, alicyclic, heterocyclic and aromatic hydrocarbon radicals, or R^1 and R^2 taken together with the connecting elements form an alicyclic structure, and wherein the total number of carbon atoms in R^1 and R^2 collectively does not exceed about 20; and n is an integer between 2 and about 10,000.

4,212,311

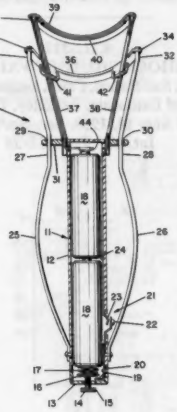
BATTERY OPERATED EYELASH CURLER

Leon del Valle, 10924 Aletta Ave., Culver City, Calif. 90213

Filed Aug. 23, 1978, Ser. No. 936,260

Int. Cl.[2] A45D *2/00*

U.S. Cl. 132—31 A **3 Claims**



1. A manually-operable eyelash curler, comprising:

(a) a pair of curved arms housed within a stationary frame, which when mechanically depressed along the outermost curved portion, drives a movable, non-electrically heated eyelash compressing element into intimate contact with a stationary electrically heated eyelash compressing element;

(b) a centrally-disposed battery pack to provide the electrical energy to heat the electrically heated eyelash compressing element;

(c) a first electrical switch which arms the electrical circuit; and

(d) a second electrical switch operably associated with one or the curved arms to energize the electrically heated eyelash compressing element when the curved arm is manually operated.

4,212,312

FRAGMENTED POLYMERS AS FRICTION REDUCERS IN PIPELINE TRANSPORTATION OF PRODUCTS

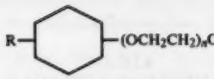
Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 793,993, May 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 571,889, Apr. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 327,379, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 170,637, Aug. 10, 1971, abandoned. This application Aug. 28, 1978, Ser. No. 937,363

Int. Cl.[2] F17D *1/16*

U.S. Cl. 137—13 **11 Claims**

1. A process for reducing the flowing friction of a liquid hydrocarbon in a pipeline with a polymer of at least 1,000 molecular weight and soluble in the hydrocarbon, comprising preparing a particulated, substantially undegraded polymer for introduction into the hydrocarbon by mixing the polymer with a water-immiscible, low-boiling solvent, water, and from about 0.05% to about 10% by weight, based on the weight of the solvent, of a surfactant having the formula



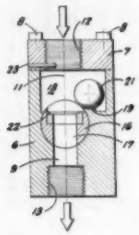
wherein R is an alkyl radical having from 4 to 20 carbon atoms and n is an integer of from 2 to 8, whereby the polymer is dissolved in the solvent, and forming polymer particles by flashing off the solvent, separating the particles from the water, and injecting the particles into the hydrocarbon.

4,212,313

SHOCK SHUTOFF VALVE

Harry K. Winters, San Rafael, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 14, 1978, Ser. No. 933,278
Int. Cl.[2] F16K *17/36*
U.S. Cl. 137—39 **2 Claims**



1. A shock shutoff valve comprising a valve body, means within said body defining a flow bore symmetrical about a normally vertical axis, a rotary plug, means on said plug adapted in one position of said plug to continue said flow bore, means in said plug defining a valve seat around said flow bore, a pedestal in said body alongside of and above said valve seat, a magnetically responsive ball adapted to rest on top of said pedestal and to roll from said pedestal downwardly toward and into said valve seat in position to block said flow bore, and magnetic means for axially urging said ball and said valve seat into close abutment in said position even when said axis is inclined to the vertical and gravity tends to urge said ball out of said seat.

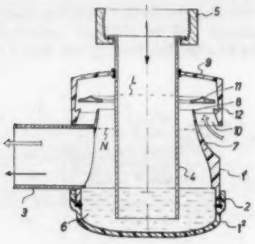
4,212,314

WASTE WATER OUTLET SANITARY PLANT COMPRISING A SIPHON

Kurt S. B. Ericson, 17 Goudenregenlaan, B-2610 Wilrijk, Belgium

Filed Aug. 31, 1978, Ser. No. 938,332
Claims priority, application Belgium, Aug. 31, 1977, 858266
Int. Cl.[2] E03C *1/295*
U.S. Cl. 137—216.2 **4 Claims**

1. A hydraulic device for the drainage of waste water from a spilling unit into a sewer comprising a container adapted for receiving a water seal therein, an inlet pipe extending from the spilling unit into said container having a lower end adapted to extend into the water seal contained in said container, an outlet pipe extending from said container and adapted to be connected to a sewer, automatic air valve means connected to said container for permitting the inlet of air into said container and blocking the outflow of air from said container, said automatic air valve means comprising an upper part of said container defining a frusto-conical neck diminishing in diameter upwardly of said container, a cover extending over said container and defining with said frusto-conical neck of said container a peripheral air inlet, and an annular valve resting over said peripheral air inlet, said annular valve adapted to be lifted by air entering said chamber when a negative pressure occurs in said outlet pipe so as to permit the introduction of sufficient quantity of fresh air and for resting over said peripheral air inlet to block the passage of air out of said container when air pressure in said outlet pipe is balanced with respect to pressure



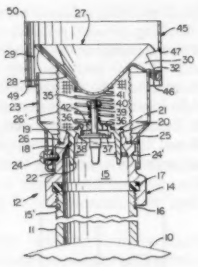
exterior to said container and when there is an overpressure in said outlet pipe whereby waste water can flow through an entire cross-sectional area of said outlet pipe into the sewer, whereas the air flow takes place after the waste water stops streaming from the spilling unit.

4,212,315

SHROUD FOR PRESSURE VACUUM VENT

Richard L. Fahl, Cincinnati, and Eugene B. Pemberton, Fairfield, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,223
Int. Cl.[2] F16K *17/18*
U.S. Cl. 137—377 **15 Claims**

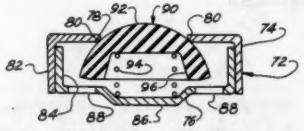


1. In combination, a body mounted on the upper end of a riser pipe of an underground storage tank, said body having first means to vent vapor from the tank when pressure in the tank exceeds a predetermined pressure and second means to allow ambient pressure to enter the tank when the tank has a vacuum therein exceeding a predetermined vacuum, a housing supported on said body and having an open upper end, a cap supported on said housing and cooperating therewith to substantially enclose said first and second means, said cap being spaced from the open end of said housing to form a passage means therebetween of an area not to retard vapor flow, and a shroud extending above the top of said cap and beneath the top of said housing to prevent driven moisture from entering said passage means while allowing upward vapor from said first means and said passage means.

4,212,316
CONTROL VALVE

Walter E. Basch, St. Louis, Mo., and Roger G. Wallis, Belleville, Ill., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,886
Int. Cl.[2] F16K *15/02*
U.S. Cl. 137—543.17 2 Claims



1. A control valve for use in an automotive fuel pump comprising:

a housing installed in the fuel pump, said housing including a cap whose top surface has a central circular opening therein forming a fuel inlet, the peripheral surface of which is outwardly curved and a seat over which the cap fits, the seat having at least one opening therein forming a fuel outlet;

a valve member positioned in the housing and movable relative to said circular opening, the valve member having an outer spherically curved contact surface for tangentially contacting said outwardly curved peripheral surface of the opening to form a seal at the curved peripheral surface of the opening and prevent flow of fuel therethrough, said valve member being of rubber and the contact surface thereof having a Rubber Manufacturing Association (RMA) class 2 finish and a surface hardness of approximately 70 durometer; and

a coil compression spring seating against said seat and bearing against said valve member to continuously urge said valve member into sealing contact with said curved peripheral surface of said opening, the spring exerting a force on said valve member such that the valve member remains seated against a positive head of fuel in the range of 24 inches to 48 inches of fuel applied in the normal direction of fuel flow through the control valve, whereby a minimal amount of fuel leakage occurs through the control valve when said fuel pump is not pumping.

4,212,317
VACUUM INTERLOCK

E. Vincent Patrick, Lorton; Howard K. Dickson, Alexandria, and Howard L. Dunmire, Stafford, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 2, 1978, Ser. No. 930,265
Int. Cl.[2] H01J *31/26;* F16K *41/04*
U.S. Cl. 137—565 2 Claims

1. A vacuum interlock device for transporting samples into a main vacuum chamber having upper and lower opposed ports surrounded by external parallel portal flanges and a first pump means being in communication with said chamber for evacuation thereof, said device comprising;

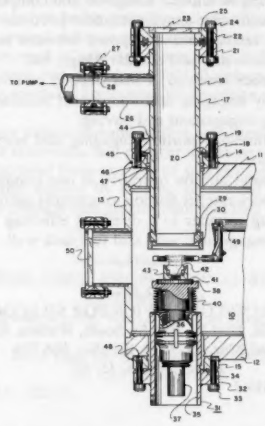
a tubular vestibule defining a center longitudinal axis and having first and second open ends said vestibule and said vacuum chamber defining two distinct chambers upon sealing contact of said gate member with said knife edge of said second end, said pump means allowing only evacuation of said vestibule when said distinct chambers are defined said second end being surrounded by a separate continuous knife edged ridge;

a first auxiliary flange with a knife edged ridge surrounding said vestibule and permanently sealed thereto including a first gasket means to vacuum couple said vestibule to said upper portal flange with said second open end in said main chamber;

a substantially cylindrical gate member having a continuous end surface portion defined by a metal softer than that in said knife edged ridges contacting said second open end of said vestibule only over the full length of its knife edge;

a lower hollow tubing member surrounded by and sealed to a lower auxiliary flange, said tubing member and said gate member being substantially coaxial with said longitudinal axis;

said lower auxiliary flange including a second gasket means



to vacuum couple said tubing member to said lower portal flange;

a driver means coupled between said gate member and reciprocatively mounted within said tubing member to reciprocate said gate member along said longitudinal axis normal to said continuous surface portion; and

a vacuum type bellows having one end sealed to said gate member and its remaining end coupled to said tubing member, said bellows surrounding and excluding said driver means from the inside of said main vacuum chamber said first end including a removable cover means sealing said first end,

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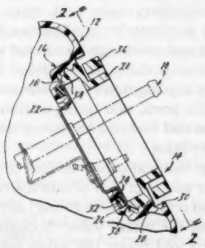
4,212,318
RETAINER ASSEMBLY FOR FUEL TANK MOUNTED SENDING UNIT

Helmut Warmbold, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 22, 1979, Ser. No. 68,837
Int. Cl.[2] E03B *11/00;* F17D *1/00*
U.S. Cl. 137—590 7 Claims



1. In an automotive fuel tank having an aperture formed

through a wall thereof for permitting insertion of a component having portions communicating with the interior and the exterior of the tank, a retainer assembly for securing said component to said wall of said tank in sealing relationship about said aperture, said retaining means comprising:

A. a stepped retainer bore formed in said tank wall about said aperture and having:
   1. an inner annular shoulder portion adjacent said aperture;
   2. an outer toothed ratchet portion formed adjacent the exterior surface of said tank wall; and
   3. an intermediate threaded portion;

B. means defining an annular flange on said component registering with said inner annular shoulder portion;

C. elastomeric sealing means disposed between said annular shoulder portion and said annular flange; and

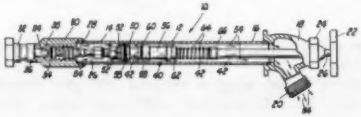
D. a plug member received in said stepped retainer bore for compressively engaging said component annular flange to effect sealing engagement and having:
   1. an inner threaded portion engaging said bore threaded portion, and
   2. an outer pawl portion operative in one condition to engage said bore ratchet portion to normally permit rotation of said plug member in a direction effecting tightening threaded engagement with said fuel tank wall.

4,212,319

ANTI-BACKFLOW DEVICE FOR SILLCOCKS

James B. Krablin, 1904 W. 30th St. South, Wichita, Kans. 67217

Filed Mar. 15, 1978, Ser. No. 886,735
Int. Cl.[2] F16K *15/18*
U.S. Cl. 137—614.2 **1 Claim**



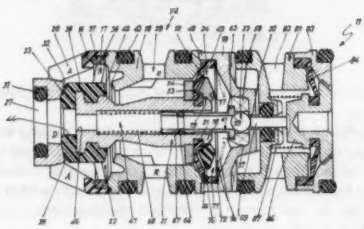
1. An anti-backflow device for preventing fluids from flowing back into a water supply system comprising:
   (a) a connecting rod;
   (b) a stationary tube having a first end portion and a second end portion and disposed around said connecting rod;
   (c) a sillcock tube surrounding the connecting rod and defining a flow passage between an inlet port and an outlet port;
   (d) attaching means at said second end portion to maintain the stationary tube stationary relative to the sillcock tube while said connecting rod is allowed to rotate within the stationary tube relative to both the stationary tube and the sillcock tube;
   (e) a valve having an annular valve housing which includes a first annular seal means sealingly attaching said valve housing to the interior of the sillcock tube and the exterior of the stationary tube, said valve housing including a plurality of circumferentially spaced ports in proximity to said first seal means, and a second annular sealing means mounted on a valve head defined by a sliding tube and biased by a spring into engagement with the valve housing closing the ports, said spring additionally engaging a stop means on said first end portion of said stationary tube said stationary tube;
   (f) a rotary valve attached to said connecting rod to open and close said inlet port of said sillcock tube fluid passage, when said rotary valve is rotated to the open position fluid flows past the rotary valve through the plurality of said inlet ports and biases the valve head open to allow the fluid to communicate with said outlet port of the sillcock tube.

4,212,320

MULTIWAY VALVE

Kurt Stoll, Esslingen, Fed. Rep. of Germany, and Jan R. deFries, Zürich, Switzerland, assignors to Festo-Maschinenfabrik Gottlieb Stoll, Esslingen, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,498
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743829
Int. Cl.[2] F15B *13/042*; F16K *11/04*
U.S. Cl. 137—625.6 **10 Claims**



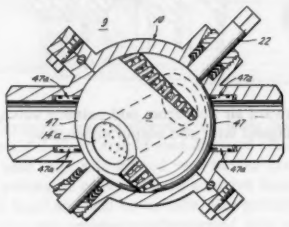
1. A multiway valve, comprising:
housing means forming a main valve chamber and a control valve chamber therein;
an axially movable main valve body reciprocally mounted for movement between first and second positions in said main valve chamber and extending into said control valve chamber;
first means defining a working port communicating with said main valve chamber;
second means defining a main vent bore communicating with said main valve chamber, said main valve body and said housing means each having third means thereon cooperatively related to control the communication between said working port and said main vent bore in response to movements of said main valve body to said first and second positions;
flexible and axially movable diaphragm means connected to and extending between said housing means and said main valve body and blocking the communication between said main valve chamber and said control valve chamber, one side of said diaphragm means being in communication with said main vent bore when said main valve body is in each of said first and second positions;
passageway means defining an inlet port to said housing means for supplying pressurized fluid to said control valve chamber to urge said main valve body to said first position;
valve means in said passageway means for controlling the supply of pressurized fluid to said control valve chamber, a blocking of said supply of said pressurized fluid to said control valve chamber effecting an axial shifting of said main valve body to said second position and an axial flexing movement of said diaphragm means to accommodate the shifting movement of said main valve body;
annular spring means in said control valve chamber secured to said housing means and having plural radially inwardly extending resilient arms; and
an annular member axially movably disposed in said control valve chamber between said diaphragm means and said resilient arms, said resilient arms engaging said annular member and urging same toward said diaphragm means.

4,212,321

LOW NOISE ROTARY CONTROL VALVE

Eldon E. Hulsey, 4111 Woodhead, #45, Houston, Tex. 77098, assignor to J. R. Butler; Eldon S. Hulsey; Joe Hulsey and Pipe Line Tech., Inc., all of Houston, Tex.

Continuation-in-part of Ser. No. 820,190, Jul. 29, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 27,967
Int. Cl.[2] F16K *47/04*
U.S. Cl. 137—625.32 15 Claims



9. In a rotary control valve comprising:

(a) a casing defining a receptacle having a main axis and having flow ports communicating with said receptacle at spaced points to define a flowway therethrough;

(b) a flow-control member rotatably disposed within said receptacle, said member comprising:

(1) a body shaped to fit said receptacle;

(2) said body defining an axial bore opening through the outer wall of said body, whereby the opposite open ends of the bore will be in register with said flow ports at the fully-open position of said control member;

(3) a pair of elongated orifice slots through the wall of said body extending circumferentially of the body in opposite directions generally from the opposite open ends of the wall of said bore, each of said slots being defined by walls converging toward their trailing ends;

(4) said body having nonslotted closure portions between the trailing ends of said orifice slots and the adjacent ends of said bore, said closure portions being adapted to close off said flow ports in the flowway-closing position of said control member, the improvements wherein:

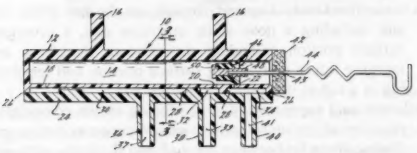
(5) said body having a silencing chamber surrounding the wall of said bore, and silencing means in said silencing chamber.

4,212,322

LINEAR VACUUM PROGRAMMER

Paul M. Douglas, St. Charles, and Andrew A. Kenny, Roselle, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 754,654, Dec. 27, 1976, abandoned. This application Jan. 18, 1979, Ser. No. 4,439
Int. Cl.[2] F16K *11/06*
U.S. Cl. 137—625.48 6 Claims



1. A linear programmer for controlling various parts of a system by fluid pressure, comprising:

(a) body means including means defining a first body portion having a longitudinal bore therein, said first body portion having at least two valving apertures extending through said first body portion and fluidly communicating with said bore, said apertures being spaced longitudinally with respect to said bore a first distance;

(b) said body means including means defining a second body portion attached to said first body portion along a parting line, said first and second body portions having adjacent surfaces, said surfaces defining a plurality of longitudinally extending manifold chambers disposed intermediate said first and second body portions and exteriorly of said bore, each of said valving apertures providing fluid communication between said bore and one of said manifold chambers;

(c) said second body portion defining at least two fluid ports, said fluid ports being spaced longitudinally relative to said bore a second distance substantially greater than said first distance, each of said fluid ports being in fluid communication with one of said manifold chambers such that said valving apertures are located intermediate said fluid ports; and

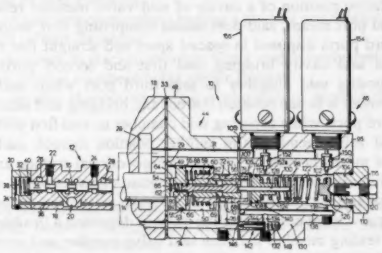
(d) plunger means movable within said bore and in sealing contact therewith, said plunger means operative to valve said apertures from one side of said plunger means to the other side thereof by moving an amount less than said second distance and greater than said first distance.

4,212,323

POWER ASSIST PROPORTIONAL REMOTE CONTROLLER

Azam S. Qureshi, Racine, Wis., assignor to Tomco, Inc., Racine, Wis.

Filed Aug. 18, 1977, Ser. No. 825,561
Int. Cl.[2] F15B *13/042*
U.S. Cl. 137—625.61 7 Claims



1. A power assist remotely controlled servo controller for remote operation of a directional control valve, said directional control valve including a valve spool for directing inlet pressure fluid from an inlet passage to a pressure passage,

a fluid pressure chamber in said directional control valve at one end of said valve spool, said pressure chamber being connected to the inlet pressure fluid passage, said servo control comprising:

force amplifying means mounted on said directional control valve, said amplifying means including a power piston operatively positioned to engage the other end of said valve spool, said amplifying means including first passage means connecting the inlet pressure fluid passage to said power piston and valve means in said power piston for controlling the flow of inlet pressure fluid to said amplifying means,

and means for remotely controlling said valve means, said remote controlling means including a housing, a pressure balanced pilot piston positioned in said housing and operatively engaging said valve means,

second passage means connecting the inlet pressure fluid passage to each side of said pressure balanced pilot piston,

and selectively actuatable means for remotely releasing fluid pressure on either side of said pressure balanced piston whereby the movement of said pressure balanced piston is

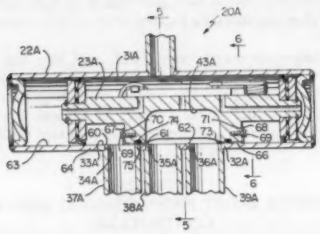
translated into movement of said valve means, said power piston following the movement of said valve means to control the position of the valve spool in the directional control valve.

4,212,324

REVERSING VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Werner R. Bauer, Radnor, Pa., assignor to Robershaw Controls Company, Richmond, Va.

Division of Ser. No. 825,957, Aug. 19, 1977, Pat. No. 4,144,905.
This application Nov. 15, 1978, Ser. No. 960,969
Int. Cl.[2] F16K *11/07, 31/124*
U.S. Cl. 137—625.66 **9 Claims**



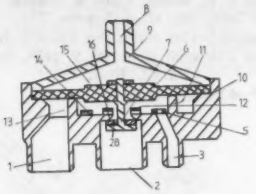
1. In a method of making a reversing valve construction having a housing means provided with a chamber carrying a movable piston-like valve member therein that controls port means of a valve seat means of said housing means through the relative position of a cavity of said valve member relative to said port means, said port means comprising first, second and third ports disposed in spaced apart and straight line relation and said cavity bridging said first and second ports while exposing said chamber to said third port when said valve member is in one position thereof and bridging said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, said valve seat means having an arcuate cross-sectional surface and said valve member also having an arcuate cross-sectional surface adjacent said arcuate surface of said valve seat means, the improvement comprising the steps of disposing a flexible annular sealing member between said valve member and said valve seat means and surrounding said cavity to seal said cavity to said valve seat means while permitting sliding movement therebetween, and operatively associating biasing means with said valve member and said flexible sealing member to urge and flex said sealing member into sealing engagement with said valve seat means so as to tend to sealingly conform said flexible sealing member to the contour of said valve seat means whereby said flexible sealing member is intermediate said arcuate surfaces of said valve member and said valve seat means.

4,212,325

PULSATOR VALVES

Evan M. Phillips, 26 Acacid Crescent, Hamilton, New Zealand
Filed Apr. 13, 1978, Ser. No. 896,094
Claims priority, application New Zealand, Mar. 25, 1977, 183700
Int. Cl.[2] A01J *5/12*
U.S. Cl. 137—627.5 **4 Claims**

1. A milking machine pulsator valve having a pressure limiting restriction applied to the air passage at output connection to the teat cups wherein a valve member is provided comprising a substantially flat annular member arranged to seat on an annularly surfaced valve seat within said pulsator valve and wherein said pressure limiting restriction comprises an orifice of predetermined size within said valve member arranged to seat downwardly on a valve seat about said output connection

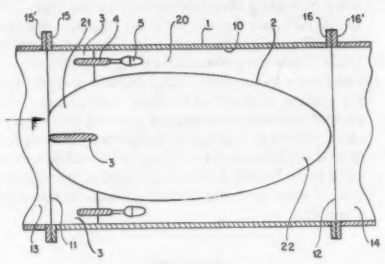


during outward air flow from said pulsator valve, so that said orifice is aligned with said output conenction.

4,212,326

FLOW RATE LIMITER FOR A HYDRAULIC CIRCUIT

Jacques Genevey, Echirolles, France, assignor to Alsthom-Atlantique, Paris, France
Continuation of Ser. No. 865,555, Dec. 29, 1977, abandoned.
This application Apr. 24, 1979, Ser. No. 32,803
Claims priority, application France, Jan. 18, 1977, 77 01300
Int. Cl.[2] F15D *1/00*
U.S. Cl. 138—40 **6 Claims**



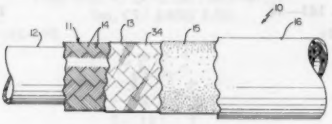
1. A flow rate limiter for a hydraulic circuit comprising:
means forming a passage having an inside wall in the form of a circular cylinder having an upstream end and a downstream end;
means disposed within said passage for producing supercavitation of the hydraulic flow through said passage, the improvement comprising:
a streamlined body disposed caoxially on the axis of the wall and including a nose at its upstream end, a diverging surface portion extending downstream therefrom and merging into a converging surface portion and terminating in a tail at its downstream end; and
wherein said supercavitation producing means comprises a plurality of circumferentially spaced supercavitation producing obstacles between the wall and the body, with said obstacles causing supercavitation in said annular space under the influence of a predetermined flow through said passage throughout said annular space defined by said streamlined body and said inside wall; and
means for fixing the body and said obstacles within said passage.

4,212,327

POLYMERIC HOSE

Doyle V. Haren, Clyde, and William M. Edwards, Waynesville, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Nov. 1, 1978, Ser. No. 956,762
Int. Cl.[3] F16L *11/04*
U.S. Cl. 138—125 4 Claims



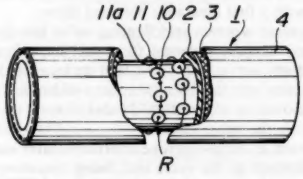
1. In a polymeric hose comprising an inner base tube, a reinforcing braid made of aramid yarn disposed concentrically around said base tube, said aramid yarn having great affinity for water, a polymeric cover tube, an adhesive layer disposed between said braid and said cover tube, said polymeric cover tube being disposed concentrically around said reinforcing braid and adhesive layer, the improvement comprising, a moisture-impervious tubular film disposed between said braid and said adhesive layer, said tubular film being bonded against said braid and in the interstices between individual yarns of said braid, said film isolating said aramid yarn and resulting in a tubular zone surrounding said braid and said tubular zone being surrounded by said adhesive layer and cover tube, said tubular zone being free of water moisture created bubbles.

4,212,328

WEAR RESISTANT RUBBER HOSE

Megumi Yamamoto, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 16, 1977, Ser. No. 851,916
Claims priority, application Japan, Feb. 18, 1977, 52-17973[U]; Oct. 17, 1977, 52-138052[U]
Int. Cl.[2] F16L *11/08*
U.S. Cl. 138—138 2 Claims



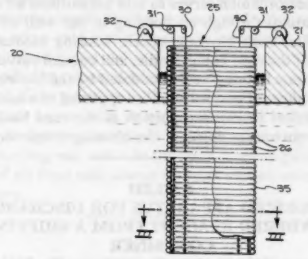
1. In a wear resistant rubber hose comprising an inner layer of surface rubber, an intermediate reinforcing layer surrounding said inner layer of surface rubber and an outer cover rubber layer surrounding said reinforcing layer, the improvements comprising: a cord having a plurality of spaced spherical bodies threaded thereon in the manner of a string of beads, said cord being helically wound around the central longitudinal axis of the hose, having a rigidity considerably higher than that of said inner layer of surface rubber, and being completely embedded inside the inner layer of surface rubber.

4,212,329

PIPE CONSTRUCTION AND METHOD OF MAKING SAME

Edward E. Horton, Portuguese Bend, Calif., assignor to Deep Oil Technology, Inc., Irvine, Calif.

Filed Aug. 14, 1978, Ser. No. 933,440
Int. Cl.[2] F16L *9/22*
U.S. Cl. 138—155 13 Claims



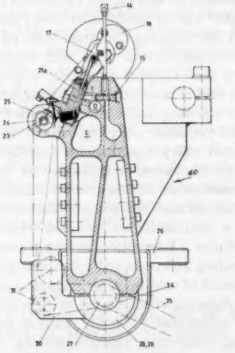
1. A pipe construction comprising:
a plurality of annular elements of selected cross section stacked one upon the other in coaxial relation to form an open ended passageway;
sealing means between each of said elements;
means for suspending said stack of elements including a plurality of tension members, each fixed to the bottommost of said elements,
each of said tension members having a guiding connection to each of said elements;
said elements in stacked relation being under compression, said tension members being under tension;
each annular element including a plurality of arcuate sections.

4,212,330

REED BAULK UNIT

Cornelis van Donk, Mortel, and Hubert P. van Mullekom, Deurne, both of Netherlands, assignors to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Sep. 5, 1978, Ser. No. 939,709
Int. Cl.[2] D03D *47/30*
U.S. Cl. 139—435 7 Claims



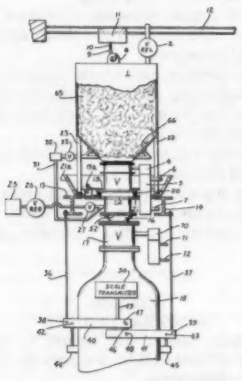
1. A reed baulk unit for a pneumtic weaving machine comprising a series of reed blades held in a groove in a head portion

of said unit and at least one blowing nozzle housing located close to said reed blades, said blowing nozzle housing being fed from a pressurized air container through valve means which are mounted on the reed baulk and adapted to be actuated by a control shaft supported by the reed baulk, said reed baulk having an arm portion by means of which it is fixed to rocking trunnions which are rotatably mounted in the weaving machine, said reed baulk unit being characterized in that the reed baulk is formed of an extruded hollow profile, a longitudinal hollow space of which serves as said pressurized air container communicating, through an opening in the wall of the reed baulk profile, with blowing nozzle housing located on the outer side of the reed baulk profile, and control valves for said blowing nozzle housing accommodated by the blowing nozzle housing, while said control shaft is supported in a substantially semi-cylindrical recess in a portion of the reed baulk profile projecting outwardly adjacent the blowing nozzle housing.

4,212,331
PRESSURIZED APPARATUS FOR DISCHARGING POWDERED REAGENT FROM A SHIPPING CONTAINER

Victor Benatar, 1191 Hopkins Ter., Atlanta, Ga. 30324

Filed Dec. 1, 1978, Ser. No. 965,400
Int. Cl.³ B65B *1/16*
U.S. Cl. 141—67 **13 Claims**



1. Apparatus for discharging powdered reagent from a shipping container having a material handling passage through its wall, said apparatus comprising support structure, a transition chamber mounted on said support structure and having an inlet at its upper part and an outlet at its lower part and arranged so as to support the shipping container with its material handling passage in communication with said inlet, weighing means supported by said support structure, a dispenser vessel suspended from and supported by said weighing means and having an entry opening adjacent said outlet of said transition chamber, and yieldable coupling means interconnecting said outlet and said entry opening for maintaining a fluid-tight connection therebetween irrespective of the weight of said dispenser vessel or of its disposition relative to said support structure, wherein said shipping container includes a support base having a circular lower part and wherein said transition chamber includes a base plate having a central inlet and upwardly extending and outwardly inclined guide means spaced radially outward of said inlet for engaging said circular lower part of said shipping container so as to position said shipping container in substantially coaxial relation with said transition chamber, and wherein a resilient sealing ring is interposed between said base plate on said transition chamber and a flange of said shipping container to form a fluid tight joint therebetween.

4,212,332
MANUALLY OPERATED PUMP FOR DISPENSING PRODUCT FROM A CONTAINER

Louis F. Kutik, Ft. Lauderdale, and Howard E. Cecil, Miami, both of Fla., assignors to Security Plastics, Inc., Miami Lakes, Fla.

Filed Feb. 21, 1978, Ser. No. 879,366
Int. Cl.³ B67D *5/06, 5/42*
U.S. Cl. 141—98 **18 Claims**

1. In a pump for dispensing product from a container through a dip tube extending up through the container, said pump having:

a housing attachable to the container at the top and to the upper end of the dip tube, said housing presenting an upwardly facing valve seat communicating with the upper end of the dip tube;

a floating valve in the housing above said valve seat having an imperforate valve element at its lower end sealingly engageable with said valve seat to completely block the upward flow of product at said valve seat, said floating valve being reciprocable toward and away from said valve seat;

an actuator reciprocable in the housing above said floating valve to withdraw product from the container and pump the withdrawn product from the housing;

and means providing a frictional coupling between said actuator and said floating valve to impart the actuator movement to the floating valve and to permit overtravel of the actuator with respect to the floating valve when the latter is restrained against movement with the actuator;

said floating valve having a recess therein above its lower end which is open at its upper end;

said housing and said reciprocable actuator together providing a variable volume pumping chamber above the floating valve;

said actuator extending down into said recess in the floating valve with a first clearance between them;

the improvement wherein said floating valve has openings in its lower end laterally outward from said imperforate valve element and said valve seat which lead up into said recess for passing product from the dip tube up into said recess when the actuator is moved up to unseat said valve element on the floating valve from the valve seat;

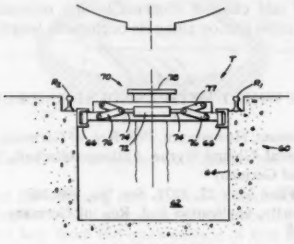
said actuator, in its downstroke overtravel after seating said valve element on the valve seat, being operative to move down within said recess and thereby force product out of said recess up into said pumping chamber through said clearance between the actuator and the floating valve at said recess;

said housing reciprocably receiving said floating valve with a second clearance between them extending from the lower end of the floating valve up into said pumping chamber;

and said actuator, in its downstroke overtravel after seating said valve element on the valve seat, forcing product out of said recess down through said openings in the lower end of the floating valve and up through said second

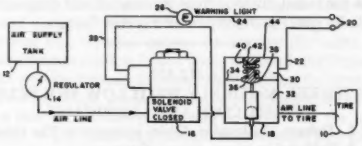
clearance between the floating valve and the housing into said pumping chamber.

4,212,333
QUICK FILL/EMPTY TANK CAR SYSTEM
Robert W. Randolph, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Dec. 7, 1978, Ser. No. 967,107
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—98 **14 Claims**



11. A railway tank car loading and unloading facility comprising: a vertically movable actuating assembly including a lading valve actuator, a vent valve actuator, and an electrical actuator; a lading conduit attached to said lading valve actuator extending to a lading container; lading conduit valve means located in said lading conduit; a pump in fluid communication with said lading conduit adapted to pump lading from said container, through said conduit, and into said car; a vent conduit attached to said vent valve actuator and extending from said actuating assembly to said container; vent conduit valve means located in said vent conduit; a lading sensor located in the upper portion of said tank; an electrical connection extending from said sensor to an electrical sensor connection on said tank bottom; said electrical sensor connection having means for engaging said electrical actuator; an electrical control console having a first electrical connection extending from said panel to said actuating assembly; a second electrical connection extending from said console to said electrical connection on said actuating assembly; a third electrical connection extending from said console to said lading conduit valve means; a fourth electrical connection extending from said console to said vent valve means; a fifth electrical connection extending from said console to said pump, whereby said actuating assembly, said lading valve means, said vent valve means, and said pump can be controlled from said electrical console, and whereby the loading and unloading of a railway tank car can be controlled from said console.

4,212,334
TIRE INFLATING UNIT
Walter H. Dudar, 1227 Levee St., Dallas, Tex. 75207
Filed Nov. 16, 1978, Ser. No. 961,135
Int. Cl.[2] B65B *3/26*
U.S. Cl. 141—197 **5 Claims**



1. A device for inflating a vehicle tire comprising a valve adapted for movement from a normally closed position to an open position and having a valve inlet for connection to a source of compressed air and a valve outlet; control means adapted to block movement of said valve to the open condition unless the pressure in the tire exceeds a preset level, said control means including a control inlet for connection to the tire to be inflated, movable contact means responsive to pressure admitted by said control inlet and movable from a normal position to a preset limit position, adjustable biasing means adapted for biasing said movable contact means toward its normal position, and circuit means opened and closed by said movable contact means, said circuit means adapted for controlling movement of said valve to its open position when said circuit means is closed, and for moving said valve to its closed condition when said circuit means is open; and, air conduit means connecting said valve outlet to the tire to be inflated, whereby when the control inlet is connected to a vehicle tire to be inflated, if the pressure in the tire is above said preset level said contact means will move against said adjustable bias means to its preset limit position to close said circuit means thereby moving said valve to the open position permitting the passage of air from said source through said air conduit means into the tire

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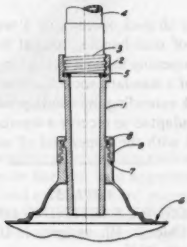
4,212,335
WATERBED FILLING UNIT
Anthony J. Bova, P.O. Box 4175, Stockton, Calif. 95204
Filed Feb. 27, 1978, Ser. No. 881,792
Int. Cl.[2] B65B *3/04*; F16L *35/00*
U.S. Cl. 141—382 **1 Claim**



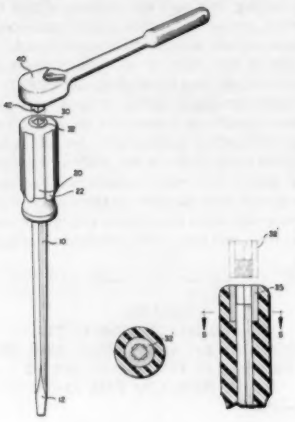
1. A waterbed filling unit—for interposition between, and connection with, the exteriorly male-threaded filler neck of a waterbed and the male-threaded fitting on the outer end of a garden hose—comprising a water-delivery tube for telescopic insertion into said male-threaded filler neck, a female-threaded fitting on the then outer end of the tube for coupling with said male-threaded fitting of the garden hose, a nut-type fitting rotatably surrounding the tube intermediate its ends for coupling with said male-threaded neck, an external annular stop flange on the tube intermediate its ends and encompassed by the nut-type fitting, the stop flange—when such nut-type fitting is threaded tight on the filler neck—being clamped against the upper end of the latter, the water-delivery tube being elongated between the stop flange and the inner end of such tube and projecting inwardly beyond the nut-type fitting, and said elongated portion of the tube being long-tapered and telescopically internally engaging in jam relation in the filler neck; the nut-type fitting, as threaded tight on the filler neck and with the stop flange as then clamped against the upper end of the filler neck, maintaining such jam relation of the elongated portion of the tube in the filler neck.

4,212,336
SCREWDRIVER
William C. Smith, P.O. Box 383, Barrington, Ill. 60010
Filed Jul. 24, 1978, Ser. No. 927,465
Int. Cl.[2] B25G *1/00*
U.S. Cl. 145—61 L **4 Claims**

1. An improved screwdriver comprising a steel shank and a

lightweight plastic handle surrounding the upper end of said shank,

said shank including a standard tapered screwdriver tip at the lower end, said tip adapted to engage slots or kerfs of standard screws, and an upper end of square or hexagonal cross-section,



a cylindrically shaped opening or a well positioned in the upper end of said handle, coaxial with the axis of said shank, said opening or well being large enough to receive the socket of a standard socket wrench, the upper portion of said shank extending into said opening or well, whereby said well is adapted to receive a standard socket wrench in engagement with the upper end of said shank.

4,212,337

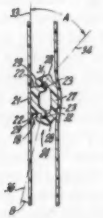
CLOSURE FASTENING DEVICE

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,432

Int. Cl.[2] B65D *33/24*

U.S. Cl. 150—3 **17 Claims**



1. A closure fastening device consisting essentially of:

a first U-shaped channel element including;

a first base portion,

a pair of spaced apart first webs extending,

from said first base portion, and

first hook portions extending from each of said first webs and facing away from each other; and

a second u-shaped channel element including a second base portion, a pair of spaced apart second webs extending from said second base portion, and

second hook portions nonlinearly extending from each of said second webs and facing towards each other;

said bases being of sufficient width to allow at least one of them to flex during the occlusion and opening of said fastening device;

said channel elements being adapted to interlock by pressing said first channel element into said second channel element so that said first and said second hook portions engage at predetermined pairs of contact surfaces, one of said pairs of said contact surfaces defining a negative angle of engagement; and

said channel elements establishing an open compartment defined by the interior surfaces of said first and second base portions and first and second web portions when said channel elements are occluded,

each of said channel elements having substantially the same cross section along its occludable length.

4,212,338

VEHICLE WHEEL WITH ANNULAR EMERGENCY SUPPORT

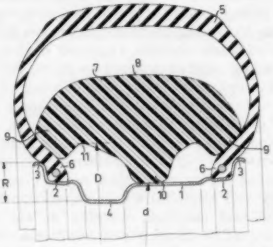
Reinhard Tiemann, Hemmingen, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,269

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722885

Int. Cl.[2] B60C *17/04*

U.S. Cl. 152—158 **5 Claims**



1. In combination: a vehicle wheel which has a rim with rim flanges and a drop center; a pneumatic tire having two bead sections and being mounted on said wheel; and an annular emergency support arranged within the hollow space of said tire, said annular support being provided with projection means located on and extending radially inwardly from the inner periphery of said annular support between said bead sections for supporting said annular support on said rim of said wheel between said bead sections adjacent to said drop center, said projection means being introduceable into said drop center for facilitating mounting and removal of said annular support, said annular support having provided on its inner periphery, on at least one side of said projection means, recess means for simplifying mounting and removal of said annular support from said wheel, the inner diameter of said recess means being greater than the inner diameter of said projection means, the difference between said diameters being at least about twice as great as the radial distance from the base of said drop center to the radially outer extremity of said wheel flanges.

4,212,339

TIRE/WHEEL ASSEMBLY WITH LOW MOLECULAR WEIGHT COOLANT-LUBRICANT

Robert L. Dobson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 2, 1979, Ser. No. 216

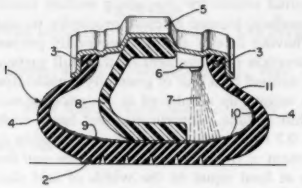
Int. Cl.[2] B60C *17/04, 19/06*

U.S. Cl. 152—158 **10 Claims**

1. A tire/wheel assembly comprised of:

(A) a pneumatic tire axially mounted on a centered, rigid

wheel rim, said assembly having attached therein a receptacle containing a coolant composition comprised of about 40 to about 70 weight percent water and correspondingly about 60 to about 30 weight percent polyethylene glycol having a number average molecular weight in the range of about 300 to about 600, said coolant composition itself characterized by having a viscosity in the range of about 4 to about 30 centipoises at about 25° C., measured with a



Brookfield LVF viscometer with spindle No. 1 at 12 rpm, and

(B) means for releasing said coolant composition onto the inner surface of said pneumatic tire as a coating thereon to conduct heat from the inner surface of said tire in its at least partially deflated state and thereby retard a rapid heat build-up to a destructive temperature range in the tire carcass.

4,212,340

RADIAL TIRE WITH BEAD REINFORCING ELEMENTS

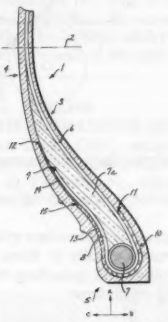
Sjirk van der Burg, 27, Avenue du Bois, B-4920 Embourg, Belgium; Karl A. Grosch, Uelenbender Weg 22, D-1506 Roetgen (Rott), Fed. Rep. of Germany, and Marcel J. Bertrand, 147 Rue de Garillarmont, B-4030 Grivegnée-Liège, Belgium

Division of Ser. No. 620,971, Oct. 9, 1975, Pat. No. 4,074,743. This application Dec. 5, 1977, Ser. No. 858,911

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1974, 2455709

Int. Cl.² B60C *9/00*

U.S. Cl. 152—355 **12 Claims**



1. In a motor vehicle pneumatic tire having an inner wall portion and an outer wall portion with a bead ring disposed therebetween and a radial carcass having parallel cord elements and a turnup portion folded about the bead ring from the inner wall portion toward the outer wall portion for termination in a turnup edge, a bead reinforcement folded about the bead ring and the carcass ply turnup portion from the inner wall portion to the outer wall portion and having a first terminal edge at the inner wall portion and a second terminal edge at the outer wall portion extending beyond the turnup edge of the carcass ply turnup portion, said bead reinforcement further including a main ply portion of predetermined thickness having a first cord material, said main ply portion extending from the first terminal edge to a transition zone at said outside wall portion between the bead ring and the turnup edge of said carcass ply with cord ends of said first cord material being at said transition zone, and a terminal ply portion of lesser thickness than said main ply portion and having a second cord material of lesser stiffness than said first cord material, said terminal ply portion extending from said transition zone, wherein said main ply portion and said terminal ply portion are in contact with one another, to said second terminal edge, at least a section of said terminal ply portion and said main ply portion being substantially coplanar along the radial carcass at said transition zone and the main ply portion and the terminal ply portion have cord elements of the same pitch inclined in the same direction running at a bias to the cord elements of the radial carcass ply.

4,212,341

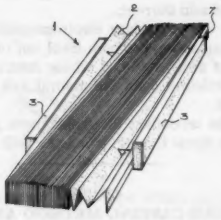
SUN SCREEN BLINDS AND THE LIKE

Eric V. Fisher, Earlwood, Australia, assignor to Impact Products Pty. Ltd., Australia

Filed May 3, 1978, Ser. No. 902,549

Int. Cl.² E05B *3/94*

U.S. Cl. 160—84 R **4 Claims**



1. Apparatus for extending or retracting such as a sun screen blind, divider, partition or the like, said apparatus comprising; a single length of elastized extensible cord means; two housing members wherein at least one housing member has stored therein a looped portion of said single length of elasticized extensible cord means; the end portions of said looped portion of said single length of cord means extending from two mutually spaced locations on said at least one housing member so that said cord means is withdrawable from and retractable into said at least one housing member through said spaced locations, the ends of said single length of extensible cord means being connected to said other housing member; an expansible and collapsible screen member located on the portions of said cord means between said two housing members and wherein said looped elasticized cord means comprise the sole means for supplying a force for retracting said screen member upon said cord means being extended from its unstretched position so that the tension at all points on said single length of elasticized extensible cord means is maintained substantially the same upon extension or retraction of said apparatus.

4,212,342

METHOD AND APPARATUS FOR REGULATING THE BATH LEVEL OF A CONTINUOUS CASTING MOLD

Sten Linder, Tystberga, and Johan Spijkerman, Nyköping, both of Sweden, assignors to Concast AG, Zurich, Switzerland

Filed Sep. 8, 1978, Ser. No. 940,622

Claims priority, application Switzerland, Sep. 19, 1977, 11398/77

Int. Cl.² B22D *11/16*

U.S. Cl. 164—4 **15 Claims**

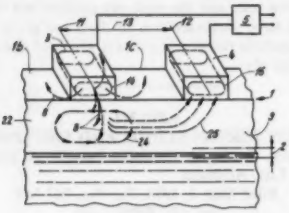
1. A method of regulating the bath level of a continuous casting mold by means of electromagnetic alternating fields, comprising the steps of:

using a continuous casting mold having a hollow mold compartment and a pour-side where there is infed molten

metal to be cast for forming therein a cast strand moving in a predetermined direction of travel;

forming an electromagnetic primary alternating field at the pour-side of the mold and which is directed into the hollow mold compartment by means of a transmitter coil having a central axis extending transversely with respect to the direction of travel of the cast strand;

inducing by means of the electromagnetic primary alternating field a current which flows in the mold wall;



generating a secondary electromagnetic alternating field by means of said current;

measuring the secondary electromagnetic alternating field emanating above the bath level out of the mold wall by means of a receiver coil whose central axis is located in spaced relation from the central axis of the transmitter coil; and

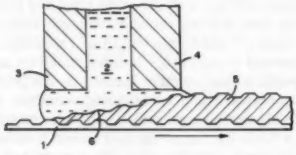
utilizing the secondary electromagnetic alternating field as an input signal for regulating the bath level.

4,212,343

CONTINUOUS CASTING METHOD AND APPARATUS FOR STRUCTURALLY DEFINED METALLIC STRIPS

Mandayam C. Narasimhan, Seekonk, Mass., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 16, 1979, Ser. No. 20,907
Int. Cl.[2] B22D *11/06*
U.S. Cl. 164—64 **13 Claims**



1. Apparatus for making contoured continuous metal strip from the melt comprising, in combination:

(a) a movable chill body providing a contoured chill surface for deposition thereon of molten metal for solidification thereon into a contoured metal strip, both surfaces of which replicate the contours of the chill surface, said chill body including means adapted to provide longitudinal movement of said chill surface at velocity of from about 100 to about 2000 meters per minute, the contours of said chill surface being provided by protruberances and/or indentations on said surface of heights and/or depths not exceeding about 2 millimeters, with the provisos that (1) said protrusions and/or indentations having heights and-/or depths of more than about 0.1 mm being defined by walls which are arranged indirection transverse to the direction of movement of the chill surface and are not steeper than about 65°, measured with respect to the chill surface, and far walls which are arranged in the direction of movement of the chill surface or in intermediate direction, and are not steeper than about 85°, measured with respect to the chill surface, and (2) said protrusions and/or indentations less than about 0.1 mm being defined by walls which are not steeper than about 88°, regardless of the direction in which they are arranged with respect to the direction of movement of the chill surface

(b) a reservoir for holding molten metal in communication with;

(c) a slotted nozzle for depositing molten metal onto said chill surface, located in close proximity to said chill surface, having its slot arranged generally perpendicular to the direction of movement of the chill surface, said slot being defined by a pair of generally parallel lips, a first lip and a second lip numbered in direction of movement of the chill surface, wherein said slot has a width of from about 0.2 to about 1 millimeter, measured in direction of movement of the chill surface, wherein said first lip has a width at least equal to the width of said slot, and said second lip has a width of from about 1.5 to about 3 times the width of said slot, wherein the gap between the lips and the chill surface is from about 0.1 to about 1 times the width of said slot; and

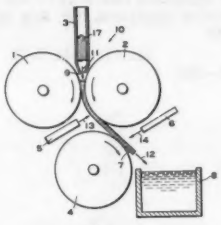
(d) means for effecting expulsion of the molten metal contained in said reservoir through said nozzle for deposition onto the moving chill surface.

4,212,344

METHOD OF MANUFACTURING AN AMORPHOUS ALLOY

Satoru Uedaira, and Shigeyasu Ito, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,102
Claims priority, application Japan, Sep. 12, 1977, 52/109747
Int. Cl.[2] B22D *11/06, 11/16*
U.S. Cl. 164—87 **11 Claims**



1. A method of manufacturing an amorphous alloy comprising the steps of:

preparing a molten mixture of the raw materials going into said alloy,

rolling and quenching said molten mixture between a pair of oppositely rotating rolls to form a film of amorphous alloy, said rolling and quenching being carried out under the following conditions:

$$Y \geq C_o\left(\frac{A}{2850}\right)^2\left(\frac{R}{15}\right)\left(\frac{X}{T_{cry}-T}\right)^4$$

where:

Y is the roll pressure per unit width of film, in metric tons per centimeter,

C_o is a constant determined by Young's modulus and the thermal conductivity of the material of said rolls,

A is the rotational speed of said rolls in r.p.m.,

R is the diameter of the rolls in centimeters,

X is the thickness of said film in microns,

T_{cry} is the crystallization temperature of said amorphous alloy in °C.,

T is the temperature of said rolls in °C., and

$$\frac{1}{R} = \frac{1}{2}\left(\frac{1}{R_1} + \frac{1}{R_2}\right)$$

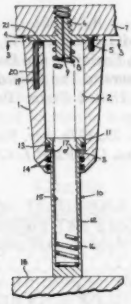
where the rolls have diameters of R_1 and R_2 cm respectively.

4,212,345

DEVICE FOR FORMING HOLES IN A FOUNDRY SAND MOLD

Steven J. Pemper, 12110 W. Greenfield Ave., West Allis, Wis. 53214

Filed Mar. 2, 1979, Ser. No. 16,919
Int. Cl.² B22C *13/00, 23/00*
U.S. Cl. 164—149 13 Claims



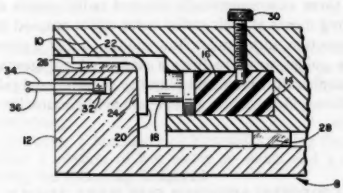
10. A device for forming holes in a foundry sand mold comprising a body having a central bore, a pin mounted for sliding movement within the bore, the outer end of the pin projecting beyond the outer end of the body, a seal located between the wall of the bore and the pin to seal the sliding joint therebetween, said body including a recess communicating with the bore, a wick disposed within the recess with the outer end of the wick terminating at the wall of the bore, and a quantity of lubricant disposed within the recess, said lubricant flowing by capillary action through the wick to the wall of the bore and then along the bore wall to the seal.

4,212,346

VARIABLE HEAT TRANSFER DEVICE

Edward S. Boyd, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Sugundo, Calif.

Filed Sep. 19, 1977, Ser. No. 834,619
Int. Cl.² G05D *23/00*
U.S. Cl. 165—32 21 Claims



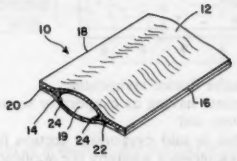
1. A thermal switch comprising:
a first heat station of heat conducting material;
a second heat station of heat conducting material;
a strip of heat conducting material extending between said first heat station and said second heat station, said strip having a thermal conduction interface with said first heat station at a first region of said strip, a thermal conduction interface with said second heat station at a second region of said strip wherein said second region is longitudinally displaced along said strip from said first region, and an intermediate region extending longitudinally along said strip between said first and second regions, wherein, in said intermediate region, said strip comprises a plurality of thin ribbons consisting of metal foil formed in a flaccid stack; and
thermal actuator means for varying contact pressure at said thermal interface of said strip with a selected one of said first and second heat stations in response to temperature changes of said first heat station.

4,212,347

UNFURLABLE HEAT PIPE

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Leola, Pa.

Filed Dec. 20, 1978, Ser. No. 971,404
Int. Cl.² F28D *15/00*
U.S. Cl. 165—46 4 Claims



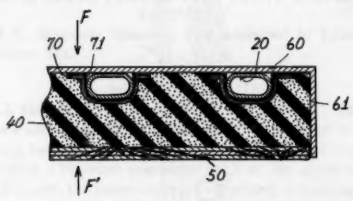
1. A gravity independent heat pipe which can be rolled up comprising:
two flexible heat conductive sheets bonded together at the edges of their facing surfaces to form an enclosed volume between them, said bonds forming crevices on the perimeter of the enclosed volume which serve as capillary channels; and
heat exchange fluid, selected to vaporize and condense in the range of temperatures anticipated for operation of the heat pipe, contained within the enclosed volume.

4,212,348

HEAT-RADIATING FLOOR BOARD

Toshiyuki Kobayashi, 401,24-5, Showa-cho, Suita-shi, Osaka, Japan

Filed Apr. 11, 1978, Ser. No. 895,484
Claims priority, application Japan, Apr. 4, 1977, 52-48712; Nov. 2, 1977, 52-131869
Int. Cl.² F24H *9/08*
U.S. Cl. 165—49 5 Claims



1. A heat-radiating floor board which has a stratified structure, the board comprising a metallic surface plate having a lower surface; a metallic tube of noncircular cross section and having a substantial flat surface, fixed meanderinly with its said flat surface in contact with said lower surface of said plate with heat-reflecting aluminum adhesive tape, said tape being in

contact with a portion of said tube and with portions of said plate adjacent to said tube; an intermediate layer of hard plastic foam strongly adhering to said metallic tube, said tape and said lower surface; and a wooden base board strongly adhering to said intermediate layer.

4,212,349

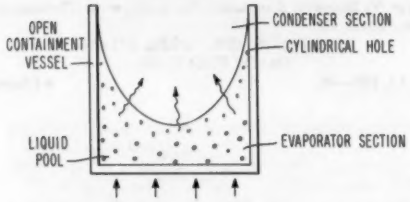
MICRO BELLOWS THERMO CAPSULE

Frank E. Andros, Binghamton, and Robert J. E. Shay, Bath, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1979, Ser. No. 48

Int. Cl.[2] F28D *15/00*

U.S. Cl. 165—105 **9 Claims**



1. A heat transfer device comprising;

a closed container having an evaporator section and a condenser section; and

a liquid coolant in said evaporator section having surface tension characteristics whereby the application of heat to said evaporator section results in the formation of a vapor bubble and a flow of vapor across said bubble which condenses in said condenser section where heat is rejected and liquid is replenished to said evaporator section by flow through a continuous liquid film.

4,212,350

MODULAR ELEMENT RADIATOR-CONVECTOR

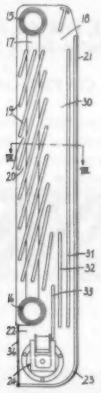
Mario Andreoli, Via dello Sterlino, 16, Bologna, Italy

Filed Apr. 6, 1976, Ser. No. 674,268

Claims priority, application Italy, Apr. 11, 1975, 4763/75[U]; May 6, 1975, 3402 A/75

Int. Cl.[2] F24H *3/00*; **F28F** *1/12*

U.S. Cl. 165—129 **2 Claims**



1. A radiator-convector comprising a plurality of assembled modular elements each of which comprises an upper sleeve member, a lower sleeve member parallel to said upper sleeve member, a plate cast integral with said sleeve members and perpendicular to a plane passing through said sleeve members, said plate having a front edge and rear edge, a conduit formed in said plate and connecting said upper sleeve member with said lower sleeve member, fins extending from the opposite sides of said plate and comprising substantially parallel fins obliquely arranged with respect to said plane and front fins provided at the front edge of said plate and forming a front wall, said front fins and the plate of adjacent elements when assembled defining air ducting vertical channels each having a lower inlet opening and an upper outlet opening and said parallel fins defining air ducting oblique channels, wherein according to the improvement said oblique channels have their lower ends open at the rear edges of said plates and their upper ends communicating with said vertical channels and wherein at the inlet openings of said vertical channels ribs are arranged which converge towards said channels.

4,212,351

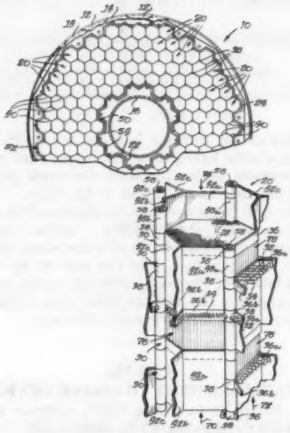
ARTICULATED MODULE FLOW GUIDE SYSTEM

Thomas H. Van Hagan, Encinitas, and David E. Tanner, Poway, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 23, 1978, Ser. No. 889,291

Int. Cl.[2] F28F *1/42*

U.S. Cl. 165—160 **13 Claims**



1. In a heat exchanger flow guide system for supporting and promoting uniform shell-side flow distribution between modular polygonal shaped tube bundles, said system comprising, in combination, a plurality of flow guides each of which includes at least three axisymmetrically-located radial panels defining connecting means at their radial outer edges adapted to facilitate connection with similar flow guides so that a plurality of the flow guides serve to form a staggered polygonal lattice work peripherally about said plurality of polygonal tube bundles defining flow guide channels having mutually shared partitions.

4,212,352

GRIPPING MEMBER FOR WELL TOOLS

Thomas E. Upton, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

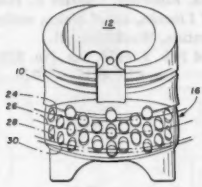
Filed Jan. 8, 1979, Ser. No. 1,499

Int. Cl.[2] E21B *23/00*

U.S. Cl. 166—206 **7 Claims**

1. A unitary tubular gripping member having a two segment intersecting-axis bore passage therethrough and exterior grip-

ping means thereon, said gripping means further comprising a plurality of insert teeth elements located such that crests of said tooth elements define a plurality of crest lines curved around said tubular gripping member and wherein said individually curved crests with a radius of curvature substantially smaller than the radius of curvature of said crest lines and arranged with a portion of each curved crests thereof lying substantially



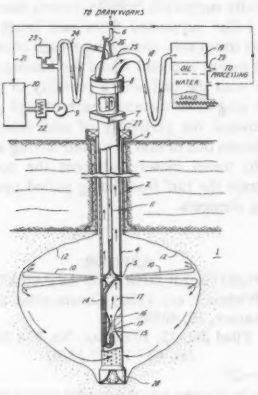
in a crest line having a curved profile around the tubular gripping member, said insert teeth elements are located in a staggered relation wherein crests of adjacent tooth elements define points substantially along adjacent crest lines, and said insert teeth elements are mounted in individual recesses in said tubular gripping member and located in a spaced relation to each other.

4,212,353

HYDRAULIC MINING TECHNIQUE FOR RECOVERING BITUMEN FROM TAR SAND DEPOSIT

Wilbur L. Hall, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,933
Int. Cl.[2] E21B *43/24, 43/37;* E21C *37/06*
U.S. Cl. 166—303 **15 Claims**



1. A hydraulic mining method for recovering viscous petroleum including bitumen from subterranean, viscous petroleum-containing unconsolidated mineral formations including tar sand deposits, said formations being penetrated by at least one well, comprising:

(a) introducing a hot, aqueous hydraulic mining fluid comprising a mixture of hot water or steam and a diamine having the following formula:

$$R_1R_2NR_3NH_2$$

wherein R_1 and R_2 and each hydrogen or a C_1 to C_6 alkyl, linear or branched, N in nitrogen, H is hydrogen, and R_3 is a C_2 to C_{18} alkylene, linear or branched, the number of carbon atoms in R_1, R_2 and R_3 being from 3 to 20, into the formation via the well in the form of a high velocity jet which rotates within the formation, said jet contacting the formation with sufficient energy to dislodge viscous petroleum one unconsolidated minerals; and

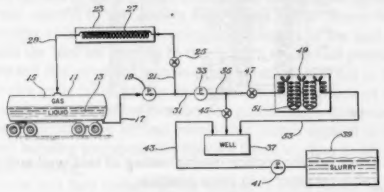
(b) recovering a fluid pulp comprising viscous petroleum, unconsolidated minerals and hydraulic mining fluid from the formation.

4,212,354

METHOD FOR INJECTING CARBON DIOXIDE INTO A WELL

Jerry H. Guinn, Pampa, Tex., assignor to Service Fracturing Company and Airry, Inc., Pampa, Tex.

Filed Mar. 19, 1979, Ser. No. 21,441
Int. Cl.[2] E21B *43/24, 43/26*
U.S. Cl. 166—303 **8 Claims**



1. In a method of injecting carbon dioxide into a well having the steps of transporting carbon dioxide to the well site inside a tank, maintaining the temperature and pressure during transporting so as to maintain the carbon dioxide predominately in a liquid state, withdrawing the carbon dioxide and boosting the pressure with a booster pump, then pumping the carbon dioxide down the well with a high pressure pump, an improved method for reducing the vaporization of the carbon dioxide between the tank and the booster pump, comprising:

diverting a portion of the liquid carbon dioxide after the booster pump and before the high pressure pump into a vaporizer;

vaporizing the carbon dioxide in the vaporizer;

transmitting the vaporized carbon dioxide from the vaporizer back into the tank; and

controlling the amount of carbon doixide diverted to the vaporizer so as to maintain the tank at a pressure sufficient to avoid vaporization between the tank and booster pump.

4,212,355

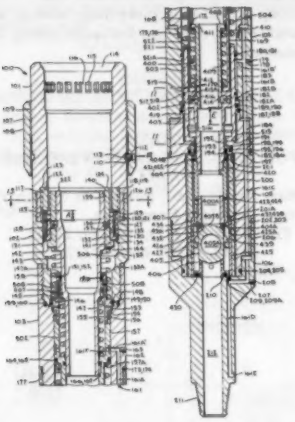
TUBING MANIPULATED TEST VALVE AND LATCH ASSEMBLY

Daniel R. Reardon, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Sep. 11, 1978, Ser. No. 940,924
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—336 **26 Claims**

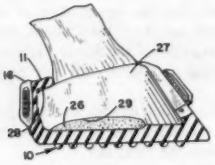
1. In a test valve assmebly adapted to be lowered on a tubular string between upper and lower tubular sections into position within a blowout preventer stack at the upper end of a bore of a well, the improvement comprising: a housing having first and second fluid flow passages therethrough; a valve member between said flow passages and shiftable in said housing to open position to communicate said flow passages during selective incremental testing of said well and manipulatable in said housing to closed position to isolate said flow passages prior to and subsequent to selective incremental testing of said well; means responsive to mechanical manipulation of said tubular string for shifting said valve member between closed

and open positions; and clutch means whereby said upper tubular section may be selectively rotationally engaged with



said lower tubular section during testing of said well and when said valve member is in open position.

4,212,356
NAIL-LESS HORSESHOE
Jno R. Battle, 337 Mt. Holyoke Ave., Pacific Palisades, Calif. 90272
Filed Dec. 26, 1978, Ser. No. 972,917
Int. Cl.[2] A01L *3/00, 3/06*
U.S. Cl. 168—18 **5 Claims**



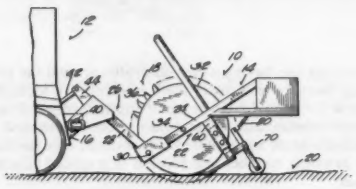
1. A nail-less horseshoe comprising, in combination:

(a) a flexible material defining an enclosure having an upper rim, said enclosure being of general hollow ungulate shape for engaging about and under a horse's hoof and including a generally horizontal forwardly directed rear lip across the rear upper perimeter portion of said rim and a front V-shaped opening extending from the upper front of said rim of the enclosure and terminating in a vertex portion at the lower front of the enclosure to permit the enclosure to be expanded and placed over the hoof, said enclosure including integrally formed exterior enlargements having generally vertical slots, said enlargements being positioned at circumferentially spaced exterior locations about the enclosure;

(b) a flexible belt of textile material passing about the exterior of the enclosure below said rim through said slots with opposite end portions of the belt extending forwardly adjacent to said V-shaped opening; and

(c) buckle means coupled to said opposite end portions of said belt for cinching the end portions together in overlapping relationship whereby said enclosure may be readily disposed over a horse's hoof and thereafter said end portions of the opposite ends of said belt cinched to circumferentially contract the enclosure about the hoof, said rear lip engaging over the rear heel portion of the horse's hoof, the opposite sides of said V-shaped opening coming together as said enclosure is contracted to thereby cause said enclosure to snugly engage the horse's hoof.

4,212,357
TURF AERATING DEVICE
Boyd D. Clements, Elmwood; Charles E. Hines, and James J. Kubat, both of Lincoln, all of Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Feb. 1, 1978, Ser. No. 874,160
Int. Cl.[2] A01B *45/02*
U.S. Cl. 172—22 **9 Claims**

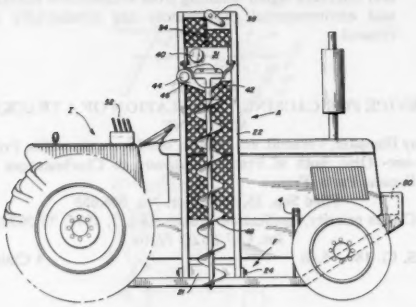


8. A turf aerating device comprising a frame, a cylindrical drum supported from said frame for rotation about a horizontally extending axis and for rolling travel over the surface of the turf to be aerated, a plurality of radially extending, core-forming elements carried on the outer periphery of said drum and adapted to penetrate the turf, said core-forming elements being arranged in a plurality of laterally spaced, generally parallel rows, a generally horizontally extending cross member mounted on said frame rearwardly of the drum axis, bracket means pivotally supported from said cross member, a ground-engageable roller supported from said bracket means rearwardly of the drum axis, and spring means connected between said bracket means and said frame for biasing said roller into engagement with the turf, and a plurality of guard members mounted on said cross member, each of said guard members extending toward the periphery of said drum to a location laterally adjacent one of said rows and having a surface which is located to travel closely adjacent the turf surface and thereby restrain the turf from being pulled upwardly by said core-forming elements.

4,212,358
POSTHOLE DIGGING APPARATUS
Kenneth R. Wisbrock, c/o Valley Construction & Fencing, 68 S. LaSalle, Aurora, Ill. 60505
Filed Jul. 25, 1977, Ser. No. 818,289
Int. Cl.[2] E21C *11/02*
U.S. Cl. 173—27 **5 Claims**

1. A posthole digging attachment for a tractor unit, comprising an undercarriage frame having side members adapted to be attached lengthwise beneath the chassis of a tractor; brackets extending outwardly from said side members at locations adapted for attachment to said chassis of a tractor at corresponding locations along its length; means for detachably connecting said brackets to a said chassis; a slide assembly incorporated in said framework and comprising a structure movable inwardly and outwardly in a lateral direction relative to the length of said frame; a vertical guide assembly pivotally connected to the outwardly extended portion of said structure and adjustable about a horizontal axis parallel to said length of the frame; a rotary drilling tool slidably mounted on said vertical guide assembly for vertical movement of the tool; and drive means for pivotally adjusting said vertical guide assembly, vertically moving said drilling tool, and moving said vertical guide assembly inwardly and outwardly said slide assembly,

vertical guide assembly and drive means being disposed outside an unobstructed space provided within said side members



and brackets to cradle and accommodate said chassis of the tractor.

4,212,359

DOWNHOLE WEIGHT CONTROL DEVICE FOR IMPACT ROCK DRILLING TOOL

Gerald L. Adcock, 511 Airway Dr., Lewiston, Id. 83501

Filed Dec. 27, 1977, Ser. No. 864,780

Int. Cl.[2] E21B *17/04*

U.S. Cl. 175—26 **7 Claims**

1. A downhole weight device for attaching to a downhole, pneumatically-operated impact rock drilling tool having a drill bit to automatically maintain the drill bit in low value pressure contact with the bottom of the hole irrespective of the depth of the hole and the working pressure to enable the tool to operate at optimum penetration efficiency while minimizing breakage and excessive wear of the drill bit, in which the impact drilling tool has:

an elongated tool housing extending between an upper end and a lower end with an enclosed internal tool cylinder chamber therebetween;

said lower end of the tool housing having a chuck for receiving and securing the drill bit thereto with the drill bit permitted limited free movement with respect to the tool housing between a closed working position and an extended nonworking position;

a hammer piston freely mounted in the cylinder chamber for moving downward toward and impacting against the drill bit;

said hammer piston having an upper face surface of a known area;

wherein the downhole weight device comprises:

an elongated cylindrical casing member having a cylindrical cavity therein;

a weight control piston member mounted for reciprocal movement within the cylindrical cavity;

first connecting means for operatively connecting one of the members to an uphole drill string;

a second connecting means for operatively connecting the other member to the upper end of the tool housing;

device air supply means for applying air at the working air pressure (1) to the tool cylinder chamber and against the upper face surface of the hammer piston to drive the hammer piston downward toward and against the drill bit and against the elongated tool housing creating an upward force related to the known area of the upper piston face tending to lift the tool housing with respect to the tool bit with the tool bit tending to move from the closed position toward the extended nonworking position, and (2) to the device cylindrical cavity and against a face surface of the weight control piston member for generating a downward force through the second connecting means applied to the tool housing to oppose the upward force tending to lift the tool housing;

wherein said face surface of the weight control piston member has a surface area related to the known area of the upper face surface of the hammer piston so that the downward force is sufficient to prevent the tool housing from lifting with respect to the drill bit and to maintain the drill bit in the closed working position with the drill bit in low value operating contact pressure with the bottom of the hole;

wherein the weight control piston member is reciprocally mounted in the elongated cylindrical cavity for movement to a contracted position when the drill string is fed downward at a substantially greater rate than the penetration rate of the drilling bit and to an extended position when the penetration rate of the drilling bit is substantially greater than the feed rate of the drill string; and

automatic air pressure decreasing means responsive to the contraction of the tool for automatically decreasing the air pressure against the hammer piston and the weight control piston when the weight control piston member approaches the contracted position to cause an increase in back pressure up the drill string and to reduce the applied downward force on the tool housing to minimize the contact pressure of the drill bit with the bottom of the hole when the drill string is fed downward at a substantially greater rate than the penetration rate of the drilling bit.

4,212,360

LOAD MEASURING ARRANGEMENTS FOR FORK LIFT TRUCKS OR THE LIKE

Keith Chesher, Billericay, England, assignor to Pye (Electronics Products) Limited, Cambridge, England

Filed Oct. 12, 1978, Ser. No. 950,659

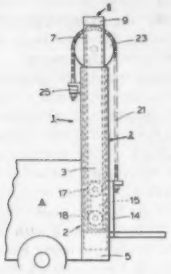
Claims priority, application United Kingdom, Oct. 20, 1977, 43721/77

Int. Cl.[2] G01G *19/08, 19/14, 3/14*

U.S. Cl. 177—139 **3 Claims**

1. An arrangement for measuring the weight of a load being carried by a fork lift truck or other load-handling device having a fork or other load engaging member mounted on a carriage supported and arranged for movement parallel to the axis of a substantially vertical mast of the device, which comprises at least one flexible carriage support member, one end of said support member being secured to a first anchor member fixed in relation to the mast and the other end of said support member being secured to a second anchor member fixed to the carriage, at least one anchor member having an opening there-

through; a securing member associated with said one anchor member and having a central portion passing through the opening in said one anchor member, a first end portion adapted to be connected to one end of the flexible support member on one side of the anchor member, and a second end portion having a cross-section greater than that of the opening and



positioned on the other side of the anchor member; a load cell transducer located between said second end portion and said other side of the anchor member and responsive to measure the compressive forces exerted between the securing member and the anchor member; and means responsive to the resulting load cell transducer measurement to provide an indication of the weight of the load being carried.

4,212,361

ELECTRICAL SCALE WITH IMPROVED IMMUNITY TO ENVIRONMENTAL DISTURBANCES

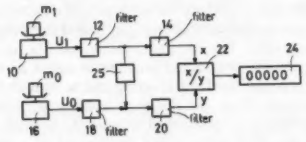
Rudolf Stocker, Azmoos, Switzerland, assignor to Mettler Instruments AG, Greifensee, Switzerland

Filed Feb. 22, 1979, Ser. No. 14,241

Claims priority, application Switzerland, Feb. 24, 1978, 2026/78

Int. Cl.[2] G01G *19/00, 3/14*

U.S. Cl. 177—200 **14 Claims**



1. In an electrical scale subject to environmental disturbances, said electrical scale having load receiving means for receiving a load to be weighed, load-responsive means connected to said load receiving means for furnishing a first load signal varying as a function of the weight of said load, reference mass receiving means for receiving a reference load, reference signal furnishing means connected to said reference mass receiving means for furnishing a reference signal responding to the weight of said reference load, and combining means having a load input connected to said load-responsive means and a reference input connected to said reference signal furnishing means for furnishing a final output signal indicative of said weight of said load relative to said reference mass, said final output signal having undesired variations due to said environmental disturbances:

the improvement comprising means for decreasing said undesired variations of said final output signal, said means comprising coupling means having a transfer characteristic varying as a predetermined function of frequency intercoupled between said load-responsive means and said reference input of said combining means for furnishing a compensating signal varying as a function of said load signal and said transfer characteristic of said coupling means to said reference input of said combining means, whereby differences in variation of said load signal and said reference signal resulting from acceleration effects of said environmental disturbances are substantially decreased.

4,212,362

DEVICE FOR CAUSING TRANSLATION OF A TRACKED MACHINE

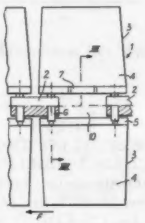
Guy Blanpain, Verneuil. en. Halatte, and Pierre Grandfils, Précy -sur- Oise, both of France, assignors to Charbonnages de France, Paris, France

Filed Sep. 25, 1978, Ser. No. 946,055

Claims priority, application France, Oct. 7, 1977, 77 30301

Int. Cl.[2] B62D *11/04*

U.S. Cl. 180—6.48 **4 Claims**



1. A device for causing translation of a machine comprising a sledge for carrying the machine and an articulated track surrounding said sledge, said track comprising a plurality of shoes articulated to one another, each shoe comprising two L-angle half-shoes each having a longer branch and a shorter branch and connecting means fastening the two half-shoes together and holding the two shorter branches spaced apart from one another and substantially parallel to the direction of movement of the track, and further comprising a jack carried by the sledge, and a pushing member provided at the end of the piston rod of the jack and arranged to cooperate with a plurality of abutments provided inside the track, wherein each abutment is carried by the shorter branches of each shoe and the space between the shorter branches forms a passage in the track.

4,212,363

TWIST-TYPE CONTROL HANDLE FOR LAWN MOWERS

Eugene Letner, Richmond Hill, and Donald L. Gobin, Savannah, both of Ga., assignors to Roper Corporation, Kankakee, Ill.

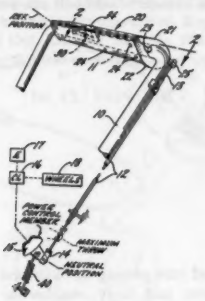
Filed Sep. 1, 1978, Ser. No. 938,969

Int. Cl.[2] B62D *51/04*

U.S. Cl. 180—19 H **7 Claims**

1. In a walking type power lawn mower or the like the combination comprising a power control member having a neutral position and movable therefrom to a position of maximum throw, a handle for manual guidance including a transversely arranged cross bar at a convenient gripping height, a tubular grip snugly telescoped over the cross bar and rockable thereon forwardly from a reference position, means including a cable coupled to the tubular grip at one end and to the power control member at the other end to increase the setting of the latter in accordance with the degree of movement of the grip from reference position, the grip being of oval cross section dimensioned to fit the grasp of the operator's hand, the long dimension of the oval being angled rearwardly and downwardly in reference position so as to be substantially parallel to the palms of the operator when they are placed in a natural grasping position on the grip whereby the operator can sense by the orientation of his hands the neutral position of the power control member as well as the subsequent degree of

departure from neutral position, latching means for normally latching the tubular grip in its reference position, and a latch-releasing trigger on the tubular grip positioned to be manually



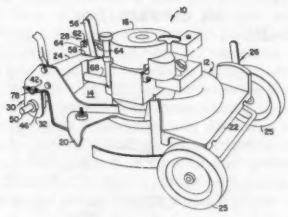
engageable by at least one hand of the operator incident to grasping the grip for releasing the latch and thereby releasing the grip for forward rocking movement.

4,212,364

DRIVE AXLE SUPPORT FRAME FOR A WALK-BEHIND, SELF-PROPELLED LAWN MOWER

Dale R. Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Dec. 14, 1978, Ser. No. 969,459
Int. Cl.[2] B62D *51/04;* **A01D** *35/26*
U.S. Cl. 180—19 R **4 Claims**



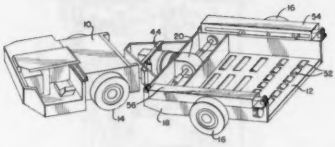
1. In a self-propelled rotary lawn mower including a main frame defining a blade housing and being supported by front and rear sets of wheels, an engine supported on a central portion of the frame and drive means coupled between the engine and one of the sets of wheels, the improvement residing in a support structure for the one set of wheels, comprising: said frame including an extension elevated above the ground; an axle support frame vertically pivotally connected to the extension for swinging about a transverse axis; adjustment means connected between the main and axle support frames for releasably fixing the axle support frame in selected vertical positions relative to the main frame; said drive means including an axle rotatably supported by the axle support frame, said one set of wheels including a pair of wheels respectively fixed to the opposite ends of the axle; a cross-shaft located on said axis and rotatably supported by the axle support frame; coupling means connected between the cross-shaft and axle for selectively establishing a drive transmitting relationship therebetween; and said axle support frame being in the form of a guard structure having opposite ends joined by a fore-and-aft curved central portion, the opposite ends and central portion of the axle support frame cooperating with the extension of the main frame to form an open-bottomed housing for at least central portions of the axle and cross-shaft and for the coupling means.

4,212,365

ARTICULATING MINE CAR COUPLING

Paul F. Curry, P.O. Box 775, Glade Spring, Va. 24340

Filed Sep. 18, 1978, Ser. No. 942,899
Int. Cl.[2] B62D *11/00, 13/02*
U.S. Cl. 180—139 **4 Claims**



1. An articulating coupling for connecting two wheeled vehicles, comprising:

vertical pivot means to connect the two vehicles for relative turning movement in a horizontal plane;

means for selectively turning the vehicles about said vertical pivot means;

horizontal pivot means to connect the two vehicles for tilting movement relative to each other, said horizontal pivot means comprising a pair of normally abutting, vertical hinge plates, means for connecting one of said hinge plates rigidly to one of the vehicles, means for connecting the other of said hinge plates to said vertical pivot means, a hinge pin pivotally connecting the lower ends of said plates to each other, and a pair of vertical wall plates connected to opposite sides of said other hinge plate and extending said other hinge plate past said one hinge plate toward said one vehicle;

said means for selectively turning the vehicles comprising a pair of extensible power units on opposite sides of said vertical pivot means and operative between said other vehicle and said wall plates to forcibly pivot said wall plates relative to said other vehicle about said vertical pivot means; and

tilting means including at least one further extensible power unit operative between said one vehicle and said wall plates to pivot said hinge plates out of normal abutting relationship and raise the respective portions of the vehicles connected by the coupling.

4,212,366

POWER STEERING CONTROL DEVICE

Tadao Ohtuka, Namekawa; Takeshi Ohe, Higashimatsuyama, and Kunihiro Hamano, Tokigawa, all of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,075
Int. Cl.[2] B62D *5/08*
U.S. Cl. 180—141 **19 Claims**

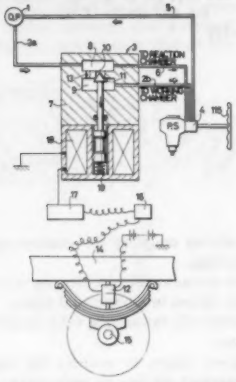
1. A power steering control system for controlling operation of a fluid pressure-operated power steering unit of a steerable vehicle having a steering wheel, said power steering unit including fluid pressure-operated reaction means for applying a reaction force to resist turning of said steering wheel, which comprises:

a pump for supplying pressurized fluid for operating said reaction means;

a vehicle load sensing mechanism which produces an output responsive to the weight of the load on the vehicle;

fluid pressure control valve means connected for controlling the pressure of the pressurized fluid applied by said pump to said reaction means and thereby controlling the amount of reaction force applied to said steering wheel, and actuating means connected for operating said control valve

means in response to the output of said vehicle load sensing mechanism so that the reaction force applied to the



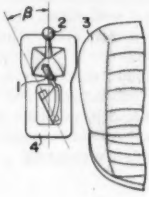
steering wheel is small when the weight of the load on the vehicle is large.

4,212,367

MANUAL LEVER FOR A VEHICLE

Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 13, 1978, Ser. No. 886,112
Claims priority, application Japan, Apr. 13, 1977, 52-42353
Int. Cl.[2] B60T *7/10*
U.S. Cl. 180—271 **4 Claims**



1. A manual lever mounted along one side of a driver's seat in a vehicle, so as to be pivoted in a plane of pivotal movement by the hand of a driver seated in said seat, wherein the plane of pivotal movement of said lever is oblique to the longitudinal axis of said vehicle so that said lever approaches said seat when said lever is pivoted backward.

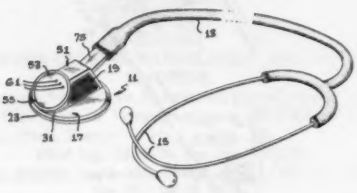
4,212,368

ANGULARLY RELATED DUAL STETHOSCOPE HEAD

Derek R. Allen, 27 Point Loma, Corona del Mar, Calif. 92625

Filed Mar. 13, 1978, Ser. No. 885,883
Int. Cl.[2] A61B *7/02;* **H04R** *25/00*
U.S. Cl. 181—131 **6 Claims**

1. A stethoscope head comprising:
a low frequency sound receiving bell having,
a bell axis and a concave cross-sectional configuration forming a bowl-like member;
a high frequency sound receiving diaphragm having,
a diaphragm axis;
a body joining and supporting said bell and said diaphragm such that said bell axis intersects said diaphragm axis at an acute angle, said body including,
a valve seat;
a first airway joining said diaphragm with said valve seat;
a second airway joining said bell with said valve seat and being offset from said bell axis, said airway being formed of a series of openings of substantially smaller diameter than the diameter of said first airway;
a valve spool operatively mounted in said valve seat having a central axis outside of said bell axis and said diaphragm axis;



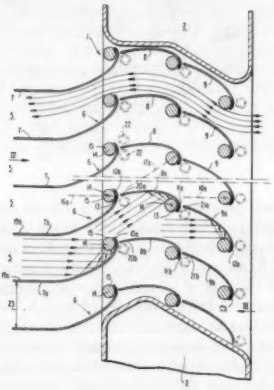
a flattened sound tube passing through said valve spool and extending from said body member to act as a lever whereby said spool can be rotated within said valve seat to selectively communicate said sound tube with said first and second airways, said sound tube having an operative axis outside of the respective bell axis and said diaphragm axis.

4,212,369

SOUND-ABSORBING COVERING, ESPECIALLY RADIATOR COVERING FOR MOTOR VEHICLES

Karl Zeilinger, Berglen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 13,817
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808166
Int. Cl.[2] F04F *17/04*
U.S. Cl. 181—224 **27 Claims**



1. A sound-absorbing covering operable to be traversed by a gaseous medium in a direction opposite to the direction of travel of the sound, characterized by at least one air channel means, in which at least one section of a channel wall is formed by an arcuate wall portion substantially parabolically shaped in cross section, the arcuate wall portion facing with its apex the in-flow side of the gaseous medium and terminating in an arcuate apex portion protruding into the interior space of the channel means, the arcuate apex portion shielding a trough-shaped recess substantially open in the direction of the discharge side of the gaseous medium, and a sound-absorbing insert means arranged in said recess at least approximately within the area of the focal line thereof.

4,212,370

SOUND ABSORBER FOR AN INTERMITTENTLY DISCHARGED GASEOUS WORKING MEDIUM

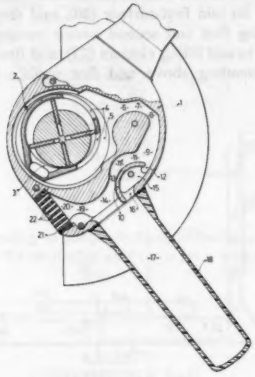
Ernst Dreher, Reutlingen; Richard Wolf, Stuttgart, and Max Bürklin, Waldenbuch, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 955,477

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752261

Int. Cl.[2] F01N 1/08

U.S. Cl. 181—230 12 Claims



1. A sound absorber for intermittently discharged gaseous working medium, comprising a discharge channel for said medium, said channel having at least one portion in which the direction of flow of said medium is changed and said one portion defining a succession of passages periodically increasing and decreasing in cross-section; the variations of the flow direction of said medium in respective passages being substantially smaller than 90°, and the ratio between the maximum and minimum cross-sections of said passages being at most 4:1; and an outlet nozzle plate terminating said discharge channel and defining a plurality of discharge nozzles having central axes converging in the direction of flow of said medium into the outer atmosphere and at least a part of said central axes intersecting at different points lying in a single plane.

4,212,371

LADDER ATTACHMENT

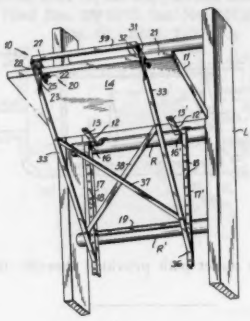
Alexander R. Gaviorno, Jr., 57 Devonshire Dr., Cheshire, Mass. 01225

Filed Apr. 25, 1979, Ser. No. 33,139

Int. Cl.[2] E06C 7/14

U.S. Cl. 182—121 7 Claims

1. A foldable platform attachment for a ladder comprising a rigid, generally rectangular carrier platform having front, rear and side edges, said platform including adjacent each of its side edges a foldable linkage arrangement adapted to assume a triangular configuration, each said linkage arrangement including a hook member fixed to said platform adjacent its front edge and adapted to be engaged over a ladder rung, a hanger arm pivotally depending from said hook member for movement about a first pivot axis parallel to the plane of said platform, said hanger arm being adapted to engage against adjacent ladder rungs and including a plurality of longitudinally spaced lock apertures, a lock bar having a free end and having a second end connected to said platform adjacent said rear edge for pivotal movement about a second axis parallel to said first axis between first and second limiting abutting positions against said platform, said bar extending beyond said rear edge of said platform in one said limiting position and beneath said platform in said other limiting position, and a stretcher leg having one end pivotally connected to said free end of said lock bar for movement about a third pivot axis parallel to said other pivot axes, said stretcher leg including at its other end a



connector portion complemental to and adapted to engage a selected lock aperture of said hanger arm.

4,212,372

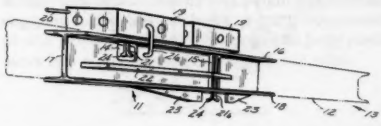
LUBRICATION PROCESS AND APPARATUS

William C. Murphy, and Lyle G. Myers, both of Fremont, Mich., assignors to Molychem, Inc., Bailey, Mich.

Filed Jun. 22, 1978, Ser. No. 917,790

Int. Cl.[2] F16N 7/00

U.S. Cl. 184—15 B 6 Claims



4. A process for central source lubrication, comprising the steps of:

guiding and guarding the path of structure in continuous movement;

directing capillary tubes to precision delivery of lubricant against the path of structure;

metering the delivery of lubricant through said capillaries by use of an attenuated capacitor discharge to the solenoid of valves connected to said capillaries in accord with precise positioning of said structure in continuous movement.

4,212,373

DOSING A FLOWING FLUID

Edgar P. Scragg, 60 Mulder St., Florida Park Extension 3, Florida, Transvaal, South Africa

Filed Sep. 6, 1978, Ser. No. 939,927

Claims priority, application South Africa, Sep. 21, 1977, 77/5656

Int. Cl.[3] F16N 7/34

U.S. Cl. 184—56 A 15 Claims

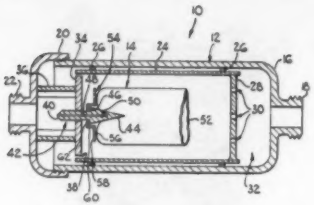
15. A method of dosing a flowing fluid which comprises the steps of:

(a) impaling an additive cartridge on a spike the cartridge comprising a bag secured to an element which element includes a sleeve, and impaling being effected by passing the spike through said sleeve so that the spike penetrates the cartridge;

(b) providing on said sleeve and said spike co-operating surfaces which inter-engage to restrain the cartridge against accidental detachment from the spike;

(c) placing the spike and cartridge within a casing having an inlet for fluid to be dosed and an outlet for dosed fluid;

(d) causing flowing fluid to impinge on the bag so as to flatten the bag and thereby force additive from the bag



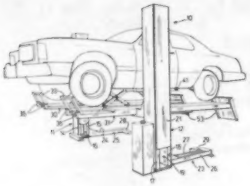
through an outlet path provided therefor through said spike.

4,212,374

VEHICLE HOIST

Leslie Bubik, Toronto, Canada, assignor to Vulcan Equipment Company Limited, Toronto, Canada

Filed Mar. 23, 1978, Ser. No. 889,587
Claims priority, application Canada, Feb. 17, 1978, 297202
Int. Cl.[2] B66F 7/10
U.S. Cl. 187—8.43 **20 Claims**



1. A vehicle hoist which comprises a pair of ground-engaging feet extending in a spaced-apart parallel relationship, said feet each having a front end and a substantially vertical column extending upwardly therefrom adjacent said front end, a ramp section for receiving a vehicle to be raised and movably supported between said columns for vertical motion in a substantially horizontal attitude, said ramp section comprising a pair of spaced-apart ramp members extending forwardly and rearwardly beyond said columns and second vehicle lifting means, said second vehicle lifting means comprising a vehicle-engaging member having an upper surface normally flush with an upper deck of a respective ramp member and means for moving said vehicle-engaging member substantially vertically, a transverse cross member extending between said ramp members in alignment with said columns, said cross member extending beyond said ramp members and having guide means engageable with said columns, and spacer means for maintaining a substantially constant relationship between said ramp section and said columns, and means for moving said ramp section relative to said columns.

4,212,375

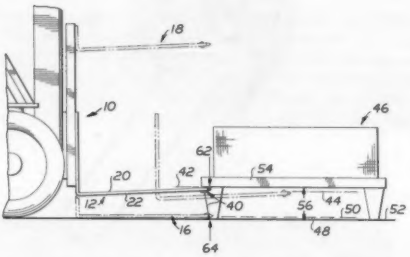
ALIGNING APPARATUS FOR MATERIAL HANDLING SYSTEM

Laurel L. Peterson, East Peoria, and Alan J. Hickman, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 15, 1978, Ser. No. 915,694
Int. Cl.[2] B66B 9/20
U.S. Cl. 187—9 R **12 Claims**

1. In a material lifting system (10) having a lifting element (12) and first means (14) for controllably moving the lifting element (12) between first and second positions (16,18), said lifting element (12) having first and second surfaces (20,22) and being positionable between material (46) to be loaded on said first surface (20) and structure (52) adjacent said material (46) to be loaded on said first surface (46), the improvement comprising:

second means (40) for delivering a first signal in response to said first surface (20) of the lifting element (12) being at an elevation (42) greater than a first preselected elevation (44) relative to said material (46) to be loaded on said first surface (20) and a second signal in response to said second surface (22) of the lifting element (12) being at an elevation (48) less than a second preselected elevation (50) relative to said structure (52) adjacent said material (46) to be loaded on said first surface (20), said second means (40) including first and second switch portions (58,60) connected to said lifting element (12), said first switch portion (58) extending above said first surface (20) and being



contactable with said material (46) to be loaded in response to said first surface (20) being positioned between said material (46) and adjacent structure (52) and at said elevation (42) greater than said first preselected elevation (44), said second switch portion (60) extending below said second surface (22) and being contactable with said adjacent structure (52) in response to said second surface (22) being positioned between said material (46) and adjacent structure (52) and at said elevation (48) less than said second preselected elevation (50); and

third means (57) for receiving said first and second signals and automatically positioning one of said surfaces (20,22) of the lifting element (12) at the respective related one of said preselected elevations (44,50) in response to receiving the related respective one of said signals.

4,212,376

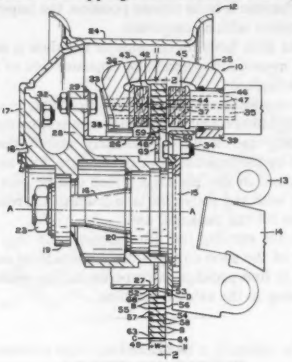
CALIPER BRAKE ROTOR

John J. Enright, Troy, and William T. Holzworth, Springfield, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 11, 1978, Ser. No. 950,491
Int. Cl.[2] F16D 65/12
U.S. Cl. 188—218 XL **12 Claims**

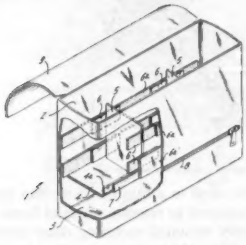
1. A rotor for a caliper brake comprising a disc with a central opening and an outer periphery, said disc including at least one coiled metal strip, said strip having a rectangular cross section with edge surfaces and overlapping surfaces, each of said edge surfaces having a sufficient thickness so that when aligned with edge surfaces of adjacent coils friction faces are provided for engagement by friction lining carriers of said caliper brake, said disc including radially inner coils adjacent said opening, radially outer coils adjacent said outer periphery, intermediate coils between said outer and inner coils, means holding said coils in overlapping position such that their edges are maintained in alignment wherein said overlapping surfaces of said inner coils are adhered over at least a 360-degree circumferentially continuous area, said overlapping surfaces of said outer coils are adhered over at least a 360-degree circumferentially continuous area and said intermediate coils are held

in overlapping position at circumferentially spaced-apart positions along said overlapping surfaces and mounting means at



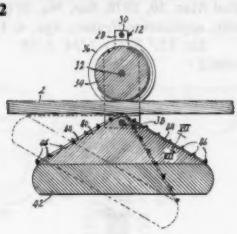
said central opening in torque-transmitting engagement with said inner coils for mounting said rotor on a wheel.

4,212,377
CONVERTIBLE BAG
Robert Weinreb, 510 Broadway, New York, N.Y. 10012
Filed Oct. 15, 1979, Ser. No. 84,754
Int. Cl.³ B65D *30/22*
U.S. Cl. 190—52 **3 Claims**



1. A fabric bag, comprising a parallelopipedal fabric pouch having an open top, opposed front and back faces, opposed side ends and a bottom; a cover secured to said pouch for closing the open top; an elongated divider panel extending from one side end to the other and swingably secured along one longitudinal end thereof to the inside of one of said faces and having a longitudinally extending free end; a pair of cooperating elongated hook and eye tape fasteners, one tape fastener being secured to said divider panel at said free end and the other fastener being secured to the inside of the other of said faces; said divider panel having a first position in which it is parallel to said bottom, thus dividing the pouch into an upper compartment located between said open top and said divider panel and a lower compartment located between said divider panel and said bottom, said divider panel being held in said first position when said cooperating tape fasteners are in contacting fastening relationship; said divider panel being swingable, after disengagement of said cooperating tape fasteners, to a second position in which it lies against the inside of said one face to merge said compartments into a single space; and a closable slot means in one of said faces for providing access to said lower compartment.

4,212,378
DEVICE FOR DE-ICING POWER CABLES
Henry J. Hrovat, 1121 W. 9th St., Newton, Kans. 67114
Filed Jun. 26, 1978, Ser. No. 919,077
Int. Cl.² B60L *5/02*
U.S. Cl. 191—62 **9 Claims**



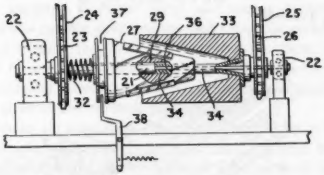
1. A device for de-icing a span of a power cable supported between a pair of gound-supported pales, said device comprising:

a. a dolly having a rotatable wheel engaging said cable for rolling movement therealong, said dolly comprising a body portion in which said wheel is mounted for rotation on an axis transverse to and above said cable,

b. a weight of substantial mass, said weight being mounted on said body portion for free pivotal movement on an axis parallel to said wheel axis and extending transversely beneath said cable, and

c. scraper members carried by said weight and normally not engaging said cable, but being operable responsively to pivotal movement of said weight on said body portion to move into scraping engagement with said cable.

4,212,379
CONICAL CLUTCH
Hugo A. Zoino, 273 Parker St., Newark, N.J. 07104
Filed Mar. 17, 1978, Ser. No. 887,602
Int. Cl.² F16D *13/24*
U.S. Cl. 192—66 **14 Claims**



1. A cone clutch comprising an inner cone and an outer cone, a shaft for supporting the cones, the inner cone being mounted for axial movement along the shaft, the inner cone being mounted for rotation with the shaft, and actuating means for moving the inner cone in one direction into engagement with the outer cone and for moving the inner cone in the opposite direction out of engagement with the outer cone, the inner cone being provided with at least one ridged surface comprising ridges disposed at predetermined angles, and said one ridged surface being interrupted by at least one radially movable plate having an arcuate outer periphery which includes ridges disposed at predetermined angles different from the first mentioned angles.

4,212,380
TORSION DAMPING ASSEMBLY FOR FRICTION CLUTCHES

René Billet, Lamorlaye, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

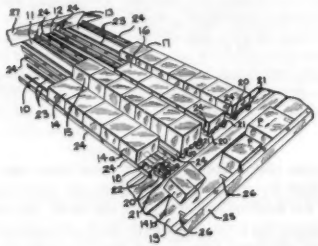
Filed Mar. 30, 1978, Ser. No. 891,769
Claims priority, application France, Apr. 4, 1977, 77 10034
Int. Cl.[2] F16D *3/14, 3/66*
U.S. Cl. 192—106.2 4 Claims

1. A torsion damping assembly comprising two coaxial members including a hub and a radial web disposed annularly around said hub, said coaxial members being mounted for relative angular displacement over a predetermined sector limited by meshing means including at least one radially oriented meshing member intermeshing with circumferential play with at least one complementary radially oriented meshing member facing the first mentioned meshing member, and a friction washer also having along its inner periphery a radially oriented meshing member similar to the meshing member on said web and also intermeshing with the corresponding meshing member on said hub.

4,212,381
ANTI-RUNOUT DEVICE AND CONVEYOR APPARATUS

Martin E. Cook, 10025 Stoll Rd., Haslett, Mich. 48840

Filed Feb. 15, 1979, Ser. No. 12,379
Int. Cl.[2] B65F *11/00*
U.S. Cl. 193—40 14 Claims



1. In a conveyor apparatus including means defining an inclined lane and a discharge end along which packages are to be conveyed by gravity for singular discharge at the end, means defining a support for the lane, a release mechanism at the discharge end of said lane, the release mechanism being moveable from a package blocking position to a package release position for a first in line package, a brake means positioned upstream from the release mechanism for retarding movement of a second in line package in the lane when the release mechanism is in its release position, the improvement in the brake means which comprises:

(a) a brake shoe wherein one side of the shoe is mounted on a lifter means and wherein an opposite side of the shoe is a brake surface;

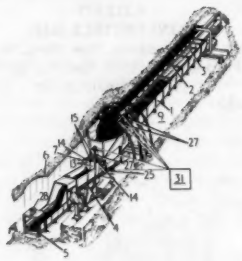
(b) guide means mounted on the support means adapted for supported movement of the lifter means such that the shoe is linearly moveable substantially above the lane for contact by the brake surface of the shoe with an underside of a second in line package which can be moving out of contact with and above the lane towards the release mechanism to lift the package; and

(c) means for moving the lifter means such that the brake surface of the shoe engages the underside of and lifts the second in line package in response to the release mechanism being in the release position.

4,212,382
BUNKERING SYSTEM

Morgan J. Williams, Melbourne, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Jun. 19, 1978, Ser. No. 916,750
Claims priority, application United Kingdom, Jun. 21, 1977, 25774/77
Int. Cl.[2] B65G *43/08*
U.S. Cl. 198—502 4 Claims



1. A device, to be used in a bunkering system including a drivable conveyor adapted to remove material from a bunker, comprising a pivotally mounted metering door mounted in a pivotal mounting and biased to remain closed, at least one fluid operable ram for moving the pivotal mounting up and down relative to the conveyor thereby to vary the clearance between the bottom of the door and the conveyor, and an indicating means which gives an indication of the clearance.

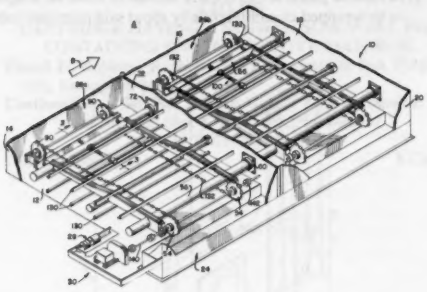
4,212,383
DRAG CONVEYOR AND HOPPER ASSEMBLY

David A. Wagner, Middlesex, N.J., assignor to Research-Cottrell, Inc., Somerville, N.J.

Filed Nov. 20, 1978, Ser. No. 962,026
Int. Cl.[2] B65G *19/00, 21/10, 41/00*
U.S. Cl. 198—616 6 Claims

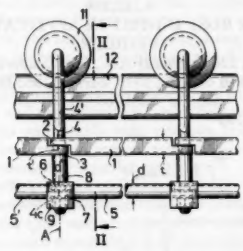
1. A drag conveyor and hopper assembly characterized by a hopper having a generally quadrangular base and vertical side walls, a conveyed material receiving trough along one side of the base, and a drag conveyor, said drag conveyor having a main frame comprising at least a pair of spaced apart longitudinal frame members telescopically extendable at one end, means for extending and retracting said telescopically extendable end, at least a pair of longitudinally spaced transverse members rigidly connected to said frame members and extending transversely therebeyond, hopper wall engaging support members telescopically mounted at the outboard ends of the at least one pair of transverse members, an idler shaft and a drive shaft each

carrying a pair of transversely spaced chain sprockets mounted at opposite ends of the frame members, a pair of drag chains



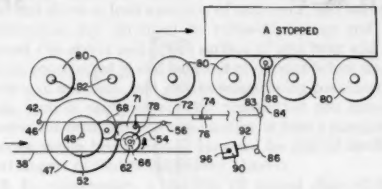
mounted between said sprockets and a plurality of drag bars connected between said pair of chains.

4,212,384
CIRCULATING CONVEYOR
Erwin Grube, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany
Filed Sep. 7, 1978, Ser. No. 940,197
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740594
Int. Cl.[2] B65G *17/32*
U.S. Cl. 198—684 **7 Claims**



1. An endless conveyor for a suspended load, comprising:
an endless track;
a load carrier displaceable along said track and formed with a plurality of wheels riding on said track, said load carrier comprising a drive chain formed by a multiplicity of rigid bars adapted to sustain tensile and compressive stress in the longitudinal dimension, successive bars being articulated together about vertical axes;
drive means including a friction roller engageable with a flank of said drive chain; and
a load-support chain for goods to be transported by said conveyor below said drive chain, said support chain being constituted of a plurality of rigid bars articulated together about vertical axes at their ends and each of the same length as a corresponding bar of said drive chain, said load carrier comprising for each wheel supporting same upon said track, a respective stirrup-shaped member having a shank forming an axle for the respective wheel engaging said track, another shank below said track, a bight interconnecting said shanks and a downwardly extending stem from the shank below said track, each of said downwardly extending shanks forming an articulation for adjoining bars of both chains whereby adjoining bars of both chains have coincident articulation axes defined by said stems.

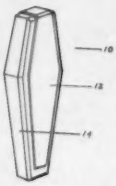
4,212,385
ARTICLE ACCUMULATION CONVEYOR
John M. Leach, Box 341, Port Jefferson, N.Y. 11777
Filed Sep. 29, 1978, Ser. No. 946,860
Int. Cl.[2] B65G *13/06*
U.S. Cl. 198—781 **10 Claims**



3. An article accumulation conveyor comprising a frame, rotatable article support units carried by said frame and positioned so as to form an article travel path, a driven elongated member mounted for movement lengthwise along but vertically spaced from and below said article support units, a frame carried support under said driven member maintaining it always at a substantially fixed elevation, means for transmitting movement from said driven member to said article support units to rotate the same so as to move the articles comprising at least one movement transmission assembly pivoted for vertical movement on and rotatably mounted relative to said frame for movement into two extreme vertical positions relative to said driven member and comprising a rotatable member, a first part of which contacts said driven member and is rotated thereby (in the extreme lowered position) and a second part of which is attached for rotation with said first part and contacts (at least one) in between two of said article support units when in the extreme raised position to rotate the same and move said article without breaking the driving contact between said first member and said driven member, said first part which contacts said driven member and the driven member itself having coacting interlocking areas which enable significant vertical separation movement between them without breaking driving contact therebetween, means powered solely by said driven elongated member and which exerts a definite and well defined vertical thrust of unlimited duration, except for space limitations, upwardly for moving said movement transmitting means vertically from the lower extreme position to the upper extreme position to force said second part in between two of said rotatable article supports to rotate them, and means operated by articles when in certain positions on said rotatable article supports for controlling the vertical movement functions of said last named means but without exerting any of the force to create the vertical movements so that a very light article can accurately control the vertical movements.

5. An article accumulation conveyor comprising a frame, rotatable article support and moving units carried by said frame and positioned so as to form an article travel path, a driven elongated member movable lengthwise along said rotatable article support unit path, activatable means for transmitting movement from said driven member to (articles on said path) said rotatable article support units, sensor means operated by articles at selected points on said path and connected with said movement transmission means so as to activate and deactivate said movement transmission means when articles are in given positions on said path whereby the conveyor is enabled to perform an article accumulation function and means normally inoperative but operable at will by an operator to lock said sensor means in either the movement transmission means activated or deactivated position whereby the conveyor is also enabled to selectively perform the function of a constantly powered roller conveyor or unpowered roller conveyor.

4,212,386
CIGARETTE CASE
Leo Maisonneuve, 4480 N. 40th St., St. Petersburg, Fla. 33714
Continuation of Ser. No. 832,086, Sep. 12, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,548
Int. Cl.[2] A45C *11/00*
U.S. Cl. 206—37 **3 Claims**



1. A novelty device configured to hold a single cigarette or the like, said novelty device comprising an elongated upper and an elongated lower member detachably coupled together by a clasp means attached to said upper member and a guide means comprising an alignment means comprising at least one ridge including a forward and rear portion formed on said upper member and extending substantially the length thereof and a corresponding ledge including a forward and rear portion formed on said lower member and extending substantially the length thereof disposed to operatively engage each other in sliding relation to maintain lateral alignment of said upper member relative to said lower member during assembly and disassembly of said novelty device and a stop means to position said upper member relative to said lower member longitudinally when assembled, said clasp means comprises a substantially flexible member fixedly attached to said upper member having a substantially U-shaped element to extend over one end of said upper member and said lower member, said stop means comprises a key-like element formed along said forward portion of said ridge and a corresponding lower stop means comprises a detent formed on said forward portion of said ledge to maintain said longitudinal alignment of said upper member relative to said lower member, said guide means further including an opening means formed on said rear portion of said ridge and said ledge to facilitate the opening of said upper member relative to said lower member, said opening means comprising an upper opening element including a first key formed on said rear portion of said ridge and a lower opening element including a second key formed on said rear portion of said ledge, said upper and lower opening elements disposed to operatively engage each other in camming relationship to lift said elongated upper member relative to said elongated lower member during the opening of said upper member relative to said lower member.

4,212,387
CABLE REPAIR KIT
Edward J. Kotski, Hackettstown; Larry N. Siebens, Great Meadows, and Donald D. Perry, Milford, all of N.J., assignors to Amerace Corporation, New York, N.Y.
Filed Dec. 18, 1978, Ser. No. 970,254
Int. Cl.[2] H02G *15/08*; B65D *81/32, 85/00*
U.S. Cl. 206—223 **6 Claims**

1. A cable repair kit having component parts therein capable of being utilized in the field to repair electrical cables or conduits, said kit comprising:

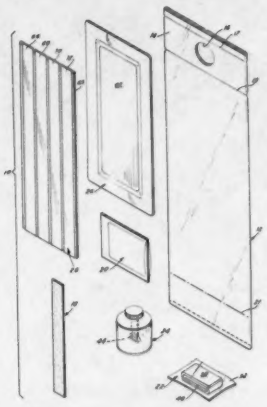
(a) an abrasive material for roughening the damaged portion of said cable;

(b) a cleaning compound for removing contaminants from said damaged portion of said cable;

(c) a filler compound for augmenting broken surface regions of said damaged cable portion;

(d) a bonding agent adapted to be applied to said damaged cable portion including said filler augmented cable surface region;

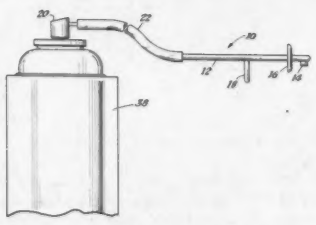
(e) a flexible patch of electrically insulative material adapted to be wrapped circumferentially about said damaged cable



portion and bonded thereto via said aforementioned bonding agent; and

(f) a tape material for taping edge portions of said patch to the outer surface of said cable to each other.

4,212,388
PORTABLE RUST INHIBITOR APPLICATOR FOR A VEHICLE
Fred P. Vacha, 226 Lombardy Ave., Fort Lauderdale, Fla. 33308
Filed Oct. 20, 1978, Ser. No. 953,085
Int. Cl.[2] B65D *69/00, 71/00*
U.S. Cl. 206—230 **5 Claims**



1. A rust inhibitor applicator kit for applying the rust inhibitor to relatively inexcessible surfaces of a vehicle body or the like, comprising:

a pressurized container with a rust inhibitor, said container having an outlet for dispensing said rust inhibitor;

a conduit having a longitudinal axis and a first end and a second end, said first end being open and said second end including a nozzle aperture disposed adjacent said second end, said nozzle aperture being positioned at a predetermined angle relative to the longitudinal axis of said conduit;

a flexible tube attachable at one end to the first end of said conduit and connectable at said tube opposite end to the outlet of said pressurized container having rust inhibitor disposed therein; and

means for punching a relatively small hole in a vehicle body surface, said hole being sized to receive said second end of said conduit to allow insertion of the conduit nozzle aper-

ture disposed adjacent the end of said conduit through said body surface.

4,212,389

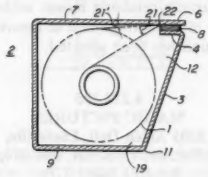
CARTRIDGE HAVING A SKEWED SIDE WALL FOR CONTAINING PHOTOSENSITIVE MATERIAL

Daniel H. Robbins, Rochester, N.Y., assignor to Itek Corporation, Lexington, Mass.

Continuation of Ser. No. 730,758, Oct. 6, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,542

Int. Cl.³ B65D *81/18, 85/67*

U.S. Cl. 206—316 **8 Claims**



1. In combination:

a. a cylindrical roll of photosensitive material having a predetermined length and diameter before the commencement of consumption thereof;

b. a cartridge containing said roll having first, second, and third walls being substantially perpendicular to each other;

b-1. a fourth skewed wall portion extending along the length of said roll and configured to form an obtuse angle of greater than 90° at the intersection of said first and fourth wall portions at a first cartridge portion thereof, and configured to form an angle of less than 90° at the intersection of said third and fourth wall portion at a second cartridge portion thereof, the distance between central portions of said first and third wall portions and the distance between central portions of said second and fourth wall portions both being slightly greater than said predetermined diameter of said roll of photosensitive material; and

c. exit orifice means positioned at said second cartridge portion, the width of said first wall portion being substantially less than said predetermined diameter of said roll and the width of said third wall portion being substantially greater than said predetermined diameter of said roll.

4,212,390

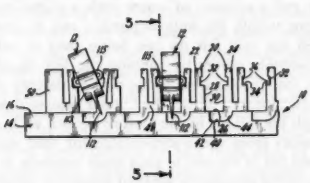
WOUND CLIP RACK

Jan Raczkowski, Glendale, and Irving A. Speelman, East Williston, both of N.Y., assignors to Propper Manufacturing Co., Inc., Long Island City, N.Y.

Filed Oct. 20, 1977, Ser. No. 843,715

Int. Cl.² B65D *85/00*

U.S. Cl. 206—339 **7 Claims**



1. A rack adapted to support and dispense wound clips of the type having prongs comprising: a base having a substantially flat upper surface; a plurality of clusters of flexible support fingers projecting upwardly from and positioned above said upper surface of said base, each of said clusters adapted to support one wound clip and including at least one pair of flexible support fingers having facing support surfaces defining a space therebetween, each of said facing support surfaces having indentations positioned above said upper surface of said base and above at least a portion of said space, said indentations constructed and arranged to releasably grasp and hold a wound clip above said upper surface of said base; and groove means constructed in said base and positioned below said upper surface of said base, said groove means being positioned proximate each of said clusters and constructed and arranged to receive the prongs of the wound clips, at least a portion of said groove means being aligned between the pair of flexible support fingers of the corresponding clusters.

5. In combination, a plurality of wound clips of the type having prongs and a rack adapted to support and dispense said wound clips, said rack including: a base, a plurality of clusters of flexible support fingers projecting upwardly from said base, each of said clusters adapted to support one wound clip and including at least one pair of flexible support fingers having facing support surfaces, each of said facing support surfaces having indentations releasably grasping and holding a wound clip; and groove means in said base associated with each of said clusters receiving the prongs of the wound clips, at least a portion of said groove means being situated between the pair of flexible support fingers of a corresponding cluster.

4,212,391

GLASSWARE CARRIER

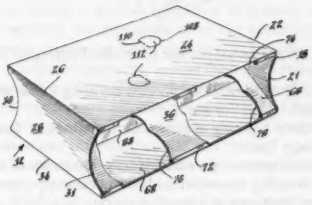
Joseph F. Schillinger, Morrison, Ill., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 898,295, Apr. 20, 1978, Pat. No. 4,155,450. This application Jan. 15, 1979, Ser. No. 3,482

The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.

Int. Cl.² B65D *5/04, 85/62*

U.S. Cl. 206—434 **13 Claims**



1. In a receptacle for displaying and carrying glassware comprising a substantially rectangular parallelopiped sleeve having a top wall, a bottom wall, a pair of side walls, and an open front and rear surface, said sleeve being collapsible to a substantially flat configuration about hinge lines connecting said walls at their lateral edges, a substantially upright divider wall secured to the interior of each of said top and bottom walls and extending between said pair of side walls, and a support panel secured between said bottom wall and the divider wall on each side of said divider wall and said top wall and the divider wall on each side of said divider wall, each of said support panels being disposed at an acute angle with respect to the top and bottom walls to which it is secured and having at least one opening for receiving an item of glassware disposed between the openings adjacent said top and bottom walls on the same side of each of said divider walls, the improvement comprising:

(a) a divider wall locking means for each said divider wall comprising:

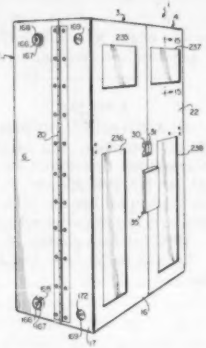
i. a movable panel hingedly connected between said divider wall and said adjacent top or bottom walls and capable of being moved from a first horizontal position locking said divider wall upright relative to an adjacent top or bottom wall and a second horizontal position thereby unlocking and collapsing said divider wall thereto, said movable panel including a first and second panel portion pivotably connected along a common fold line to form a hinge, said first panel portion being pivotably connected to said divider wall and said second panel portion being connected to said adjacent top or bottom wall, whereby said first and second panel can be placed in face to face relation to define said first horizontal position and substantial side by side relation to define said second horizontal position.

4,212,392

MEDICAL EMERGENCY TREATMENT KIT

Robert T. McKenzie, Manlius, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,942
Int. Cl.[3] B65D *69/00*
U.S. Cl. 206—571 **8 Claims**



1. In a portable kit for use in medical emergencies, the combination of

a main upright housing portion defining a first storage space which opens forwardly;

secondary housing means which defines at least a second storage space;

mounting means mounting at least a portion of said secondary housing means on said main housing portion for movement between a closed position, in which said second storage space opens toward said first storage space, and an open position, in which said second storage space is disposed beside said first storage space and opens forwardly;

first article-retaining means disposed in a predetermined location and orientation in said first storage space and comprising

first support means defining a plurality of forwardly opening recesses each dimensioned to receive and support a medicine injector vial, and

plate means disposed in upright position in front of said first support means and including a plurality of apertures each aligned with a different one of said recesses;

second article-retaining means disposed in a predetermined location and orientation in said second storage space and comprising

second support means defining a plurality of recesses which extend across said second storage space and open away from said main housing portion when said portion of said secondary housing means is in said open position, each of said recesses of said second support means being dimensioned to accommodate a syringe unit with a portion of the syringe unit exposed to view when said portion of said secondary housing means is in said open position,

each of said recesses of said second support means being aligned horizontally with at least one of the forwardly opening recesses of said first support means, said at least one forwardly opening recess being dimensioned to accommodate and support a medicine injector vial of the size to be employed with the syringe unit accommodated by the recess of said second support means with which it is horizontally aligned,

whereby the user of the kit, having chosen a medicine injector vial from said first article retaining means, can quickly select the related syringe unit from said second article retaining means without need for inspection of the syringe unit to assure that the proper syringe unit has been selected.

4,212,393

MAGIC PICTURES

Leon G. Lenkoff, 3203 Alden Dell, Louisville, Ky. 40207

Filed Dec. 29, 1978, Ser. No. 974,520
Int. Cl.[2] B44D *5/06*
U.S. Cl. 206—575 **11 Claims**

1. A coloring package combination comprising:

invisible coloring pictures which are each outlined in a water-insoluble ink defining various areas therein, said areas having printed therein a mixture of a water-insoluble ink of a uniform color and a variety of water-soluble coloring materials of different colors located at certain predetermined portions of the picture, said water-soluble coloring materials being thoroughly mixed with the water-insoluble ink to such an extent that the water-soluble colors are hidden from sight within the water-insoluble uniformly colored ink;

a single felt tip marking pen comprising a tubular hollow holder enclosed at one end and comprising a felt tip located at the other end, said tubular holder containing therein a liquid selected from the group consisting of water and a solution of water with a water evaporation inhibitor within the hollow portion and in contact with the felt tip, said felt tip pen being used to activate the water-soluble colors by rubbing the felt tip of the pen across the various areas in the picture thereby depositing the water located within the tubular saturated pen holder through the felt tip to the picture surface so as to release the colors from the water-soluble ink said water being metered out of the pen in such small amounts as to enable one to color accurately without splashing water onto the picture and forming pools of smeared water colors thereupon; and,

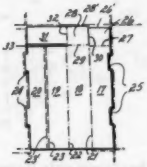
a wrapper to house the pictures and felt tip marker into a single package.

4,212,394

EDGE AND CORNER CUSHION FOR PALLETIZED PACKAGES AND THE LIKE

Donald E. Alley, 5440 Hillside Ter., Milford, Ohio 45150

Filed May 21, 1979, Ser. No. 41,241
Int. Cl.[2] B65D 5/60, 5/50, 25/12
U.S. Cl. 206—586 12 Claims



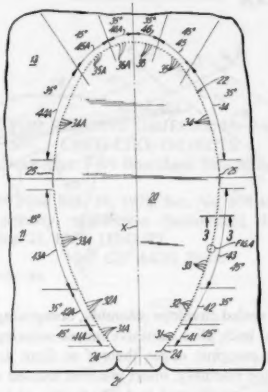
1. An edge and corner cushion comprising a generally rectangular blank fabricated from corrugated paperboard or other type of stock material, said blank including a plurality of score lines defining panels which are folded along said score lines for forming said cushion, said blank including first, second, third, fourth, fifth and sixth score lines; a first panel being bordered by said first score line, a first edge of said blank, a second edge of said blank and said fourth score line; a second panel adjoining said first panel along said first score line, said second panel being bordered by said first score line, said first edge of said blank, said second score line and said fifth score line; a third panel adjoining said second panel along said second score line, said third panel being bordered by said second score line, said first edge of said blank, said third score line and a first cutout; a fourth panel adjoining said third panel along said third score line, said fourth panel being bordered by said third score line, said first edge of said blank, a third edge of said blank and said first cutout; a fifth panel adjoining said first panel along said fourth score line, said fifth panel bordered by said fourth score line, said second edge of said blank, a fourth edge of said blank and a first cut; a sixth panel adjoining said second panel along said fifth score line, said sixth panel being bordered by said fifth score line, said first cut, said fourth edge of said blank and said sixth score line; and a seventh panel adjoining said sixth panel along said sixth score line, said seventh panel being bordered by said sixth score line, said fourth edge of said blank, said third edge of said blank and said first cutout; said first panel being foldable along said first score line so that said first and fifth panels respectively overlap said second and sixth panels; said fifth and sixth panels being foldable along said respective fourth and fifth score lines so that said overlapping fifth and sixth panels are substantially perpendicular to said overlapping first and second panels; said seventh panel being foldable along said sixth score line so that said seventh panel is substantially perpendicular to said overlapping first and second panels and said overlapping fifth and sixth panels, the border of said seventh panel defined by said first cutout lying substantially parallel to said second score line; said third panel being foldable along said second score line so that said third panel overlaps said seventh panel; and said fourth panel being foldable along said third score line so that said fourth panel overlaps said overlapping third and seventh panels; the border of said first panel defined by said second edge of said blank and the border of said fourth panel defined by said third edge of said blank having cooperating locking means for retaining said blank erected into said cushion once said panels are folded, said erected cushion for protecting an edge and at least one contiguous corner of a package against damage from binding straps or impact and for providing a brace between vertically stacked packages.

4,212,395

MULTI-ANGLED PERFORATED OPENING DEVICE

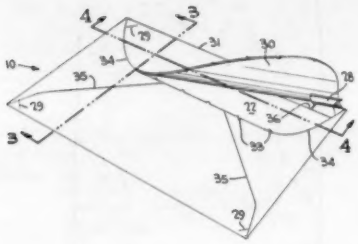
Ralph J. Korte, Darien, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 22, 1979, Ser. No. 969,224
Int. Cl.[2] B65D 17/20, 17/24
U.S. Cl. 206—611 4 Claims



1. A carton of sheet fibrous material including a removable access panel having a curvilinear peripheral outline defined by a plurality of spaced linear perforations, said outline comprising a plurality of pairs of associated arcuate segments, the perforations in each arcuate segment of an associated pair of segments being the mirror image of the perforations in the other segment of said associated pair of segments, all of the respective perforations of one of the arcuate segments being disposed at the same predetermined angle relative to the longitudinal axis of said access panel, each of said pairs of arcuate segments defining a discrete panel section, at least one of said panel sections having a greater resistance to tearing than the other panel sections, the perforations of the panel section of higher resistance to tearing being disposed at a predetermined angle relative to the longitudinal axis of the access panel which is greater than the angle to which the perforations of the other discrete panel sections are disposed relative to the longitudinal axis of the access panel, said access panel being generally oval in configuration and including at one end thereof a pull tab; a first pair of spaced apart opposed cuts adjacent said pull tab; a first minor support section disposed adjacent said first pair of cuts, each of the arcuate segments defining said first minor support section having seven perforations; a first minor tear section disposed adjacent said first minor support section, each of the arcuate segments defining said first minor tear section having twelve perforations; a first major support section adjacent said first minor tear section, each of the arcuate segments defining said first major support section including thirty-one perforations; a second pair of spaced apart cut portions disposed adjacent said first major support section; a first major tear section disposed adjacent said second pair of cuts, each of the arcuate segments defining said first major tear section having twenty-seven perforations; a second minor support section disposed adjacent said first major tear section, each of the arcuate segments defining said second minor support section having twelve perforations; and a second minor tear section disposed adjacent said second minor support section, each of the arcuate segments defining said second minor tear section having seven perforations, such that the access panel, while being readily removable from the carton, includes at least one support section defined by said panel section of higher resistance to tearing, thus protecting the carton from accidental collapse.

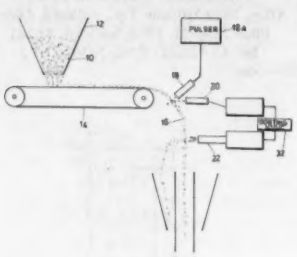
4,212,396
ENVELOPE ASSEMBLY
Robert H. Allen, North Tonawanda, and Victor J. Robertson, Niagara Falls, both of N.Y., assignors to Moore Business Forms, Inc., New York, N.Y.
Division of Ser. No. 809,922, Jun. 24, 1977, Pat. No. 4,166,539.
This application Oct. 31, 1978, Ser. No. 956,180
Int. Cl.[2] B65D *27/34*
U.S. Cl. 206—629 4 Claims



1. A stuffed, sealed envelope assembly, comprising, superimposed front and back plies, adhesive means securing said plies together along marginal edges thereof to form an envelope pocket within the assembly, insert material located within said pocket and being unattached to said plies so as to be freely disposed within said pocket, means including chip elements in abutting engagement with at least one edge of said insert material for maintaining said insert in a desired registration position within said pocket, means lying adjacent one of said marginal edges for opening said pocket and exposing said insert material for extraction therefrom, said opening and exposing means comprising at least one cut line extending through only one of said plies and defining a pocket access opening, said cut line lying near one end of said one insert edge, and said cut line partially delimiting a portion of said one ply which may be separated along said one insert edge from the remainder of said one ply upon insertion of an opener through said access opening, said chip elements underlying said portion of said one ply and being secured thereto, whereby said pocket may be opened and said insert material exposed for extraction therefrom as said portion is separated along said one insert edge from said remainder of said one ply upon exertion by the opener of a force causing the separation after the opener is inserted through said access opening, said chip elements being moved away from said insert upon the separation of said portion.

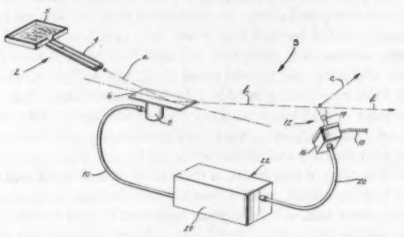
4,212,397
SEPARATION OF MATERIALS
Manfred Bockelmann, 65 Maid Marion Ave., Robindale, Transvaal, South Africa
Filed Nov. 29, 1976, Ser. No. 745,896
Claims priority, application South Africa, Dec. 8, 1975, 75/7668
Int. Cl.[2] B07C *5/346*; G01J *1/58*
U.S. Cl. 209—589 7 Claims

1. Apparatus for separating from a batch of particulate material a selected material having the intrinsic property of fluorescing with a predetermined decay time when irradiated with radiation from a suitable source of radiation, said apparatus comprising means for providing a beam of radiation suitable to cause the selected material to fluoresce with the predetermined decay time; means for pulsing the beam with a repetition interval greater than the predetermined decay time; means for causing a stream of the particulate material to move through the pulsed beam; means for detecting the fluorescing material in the stream and for obtaining a measure of the decay time of the fluorescing; and means responsive to said last-named means



for deflecting from the stream only fluorescing material having the predetermined decay time.

4,212,398
PARTICLE SEPARATING DEVICE
Ralph M. Parker, Redding, and James H. Mock, Ceres, both of Calif., assignors to Pet Incorporated, St. Louis, Mo.
Filed Aug. 16, 1978, Ser. No. 934,092
Int. Cl.[2] B07C *5/00*
U.S. Cl. 209—590 18 Claims

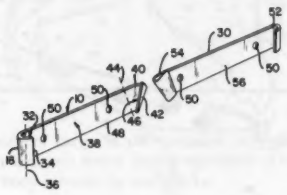


1. An apparatus for separating comingled solid particles, said apparatus comprising: a sounding plate against which the particles are directed one at a time, whereby the individual particles impart mechanical vibrations to the sounding plate with the vibrations produced by like particles being similar in frequency and decay; means for converting the vibrations produced in the sounding plate by each particle into an electrical input signal that oscillates at the frequency of the vibrations and undergoes changes in amplitude that correspond to changes in the amplitude of the vibrations; logic means for analyzing the input signal as to the oscillations which exceed a prescribed threshold amplitude and for producing an output signal which distinguishes those input signals that have a prescribed number of oscillations exceeding the threshold amplitude from those input signals which do not, so that the particles after striking the sounding plate may be separated on the basis of output signals derived from the logic means.

4,212,399
SHOE MOUNTING APPARATUS
William H. Penney, 15 Putnam St., Revere, Mass. 02151
Filed Dec. 11, 1978, Ser. No. 968,549
Int. Cl.[2] A47F *7/08*
U.S. Cl. 211—35 9 Claims

1. A shoe mounting apparatus comprising a pair of straps, each of said pair of straps having a first hook-like end and a second hook-like end thereon, said first hook-like end having a surface being a portion of a surface of revolution, said surface of revolution defined by an axis of revolution, said axis of revolution extending transverse to the longitudinal axis above

said strap and outwardly from a first lateral surface thereof, said second hook-like end having a surface area being a portion of the surface area of a truncated conical surface, said truncated conical surface having a longitudinal axis transverse to said longitudinal axis of said strap and extending outwardly from said lateral surface thereof, said each of said pair of straps defining a first edge and a second edge extending at said second hook-like end, said first edge defining a larger partial open



mouth portion than the partial open mouth portion defined by said second edge, said each of said pair of straps defining a third edge and a fourth edge extending at said first hook-like end, said third and said fourth edge defining a pair of partial open mouth portions each having the same size, wherein said larger open mouth portion is larger than each of said pair of partial open mouth portions, means to secure said pair of straps to a vertical standard.

4,212,400

STAND FOR HOLDING UTENSILS TO BE DRIED

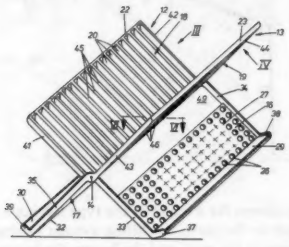
Renate Buchsteiner, Gingen, Fed. Rep. of Germany, assignor to Johannes Buchsteiner GmbH & Co KG, Gingen, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,266

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 7737937[U]

Int. Cl.[2] A47F 7/00

U.S. Cl. 211—41 **40 Claims**



1. A stand, particularly for holding utensils to be dried, comprising two plate-like members pivotally connected to one another in a scissors-like manner and pivotable about an axis between an open position so as to assume a rack shape and a closed position, each of said members having an upper portion located above said axis and adapted in said open position to support utensils to be dried, and a lower portion located below said axis and adapted to support the stand in at least said open position, said lower portion of each of said members having a lower end region, a supporting section extending from said lower end region toward said axis and adapted to support utensils to be dried, and a holding section extending from said supporting section in said lower end region at an angle relative to said supporting section so as to prevent utensils supported by said supporting section from sliding off the latter, each of said holding sections being a strip laterally projecting from a respective one of said supporting section so as to form a V-shaped receiving recess therebetween, each of said strips including a substantially right angle with a respective one of said supporting sections and having a lower surface adapted to stably support the stand in an upright manner in said closed position.

4,212,401

DEVICE FOR STORING OBJECTS, IN PARTICULAR CARD-LIKE OBJECTS

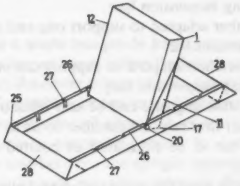
Eduard H. Schweizer, 5101 Boarshead Rd., Minnetonka, Minn. 55343

Filed Feb. 16, 1978, Ser. No. 878,447

Claims priority, application Switzerland, Feb. 24, 1977, 2301/77; Sep. 21, 1977, 11543/77

Int. Cl.[2] A47G 29/00

U.S. Cl. 211—81 **4 Claims**



1. A device for storing and showing objects, particularly card-like objects, comprising:

a stand including a generally rectangular flat base and upstanding parallel longitudinal sides provided on their opposed inner surfaces with a plurality of pairs of opposed groove means defining bearing means; and

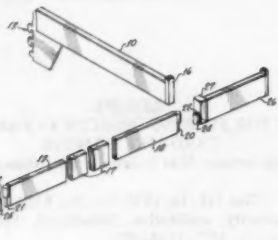
a plurality of generally rectangular, generally flat openable and closeable containers for the objects adapted to be stacked generally upright in said stand, each of said containers having a base portion and wherein a plurality of the objects can be arranged vertically supported on said base portion, each of said containers having a front section and a rear section which includes said base portion and having means pivotally connecting said sections for pivotal movement about the front edge of said base portion between a closed position and an open position, whereby in said open position a stack of objects supported upright in said rear section can readily be turned forward one-by-one to be stacked on the inside of said front section, each of said containers also including a pair of projections on its opposite sides adjacent said base portion adapted to be received in a pair of said bearing means to permit tilting movement of said container in said stand between forwardly and rearwardly inclined positions, whereby when a pair of adjacent containers is tilted apart the rearward of said containers can be opened as aforesaid, the lower ends of said groove means and said base portion of each container being arranged and proportioned so that the rear edge of said base portion engages said stand base when a container is in its rearwardly inclined position to serve as a stop means to maintain the container in such position, and wherein said stand is provided with an upstanding front side engageable by the foremost of the containers when the latter is in its forwardly inclined position to serve as a stop for maintaining said container in such position.

4,212,402

GARMENT DISPLAY RACK

Edmund R. Kelly, Downey, and Thomas V. Orona, Sr., El Monte, both of Calif., assignors to Rax-Unlimited, South Gate, Calif.

Filed Jul. 10, 1978, Ser. No. 922,989
Int. Cl.[2] A47F 5/08
U.S. Cl. 211—105.3 5 Claims



1. A garment display rack comprising:
a telescoping suspension bar;
a first member adapted to support one end of said telescoping suspension bar;
a second member adapted to support the other end of said telescoping suspension bar;
means for attaching one end of said telescoping suspension bar to said first support member so as to permit said suspension bar to be translated or rotated in a horizontal plane; and
means for attaching the other end of said telescoping suspension bar to said second support member so as to permit said suspension bar to be translated or rotated in a horizontal plane and,
wherein said means for attaching the end of the suspension bar to said first member to permit translation and rotation, comprises:
a pivotal joint attached to one end of said telescoping suspension bar;
a slidable sleeve adapted to translate with respect to said first member;
a bearing support for engaging said pivotal joint; and
means for attaching said bearing support to said slidable sleeve.

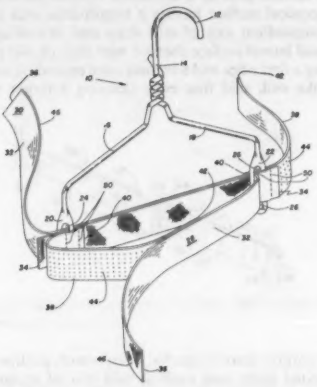
4,212,403

DRAPERY HANGER

Michael R. Zeigler, 1125 Maple Ave.; Robert P. Zeigler, 6675 Quail Ridge La., and Bert A. Zeigler, 1333 Maple Ave., all of Fort Wayne, Ind. 40802

Filed Feb. 27, 1978, Ser. No. 881,377
Int. Cl.[2] A47F 7/16
U.S. Cl. 211—119 7 Claims

1. A drapery hanger comprising a hanger member having a pair of arms extending in opposite directions, a pair of collars each being adjustable to a plurality of different circumferential lengths, means connecting said collars to said arms, said collars being supported by said arms, said collars each comprising an elongated and flexible element having opposite ends, and means for fastening said opposite ends together at various positions, said hanger member being between said collars, said collars opening in opposite directions from said hanger, said hanger member being sufficiently strong to bear the weight of



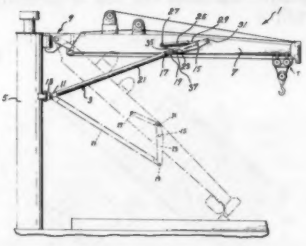
at least one pair of drapes, each of said collars being sufficiently strong to bear the weight of at least one drape.

4,212,404

DEVICE FOR LIFTING CRANE BOOM

George T. R. Campbell, Nassau, The Bahamas, and Yukitoshi Morioke, Chiba, Japan, assignors to Algoship International Limited, Nassau, The Bahamas

Filed Dec. 27, 1977, Ser. No. 864,481
Claims priority, application Japan, Dec. 25, 1976, 51-157131
Int. Cl.[2] B66C 23/54
U.S. Cl. 212—238 12 Claims



1. A lifting system for a crane of the type having a mast, and a boom hinged to the mast; the lifting system having a brace, extending between the mast and the boom; the brace pivotally connected to both the mast and the boom; a hinge in the brace dividing it into a short section, connected to the boom, and a long section, connected to the mast; and boom moving means pivotally connected to the boom and the short brace section at a first point spaced from the hinge.

4,212,405

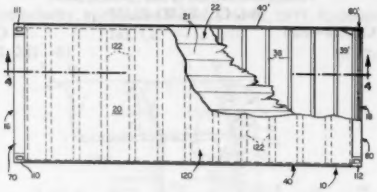
ALUMINUM PANEL CONTAINER OR TRAILER BODY

George A. Schmidt, 370 Winchester Ave., Langhorne, Pa. 19047, assignor to Srick Corporation, Fairless Hills, Pa. Continuation-in-part of Ser. No. 868,772, Oct. 23, 1969, abandoned. This application Mar. 7, 1972, Ser. No. 232,448

Int. Cl.[3] B65D 88/12, 6/34
U.S. Cl. 220—1.5 33 Claims

1. A frameless cargo-carrying container or trailer unit comprising: a body comprising a floor, a front end, a rear end, and a pair of opposing sides, at least each of said sides consisting essentially of an aluminum alloy plate having a minimum tensile yield point of about 25,000 p.s.i., each of said plates having

a substantially uniform thickness of at least about 5/32 of an inch, and means interconnecting said floor and each of said sides whereby at least about 67 percent of the load caused by



the presence of cargo in the container or trailer body and created by dynamic forces during operation of said container or trailer body is borne by said sides.

4,212,406

CONTAINER, IN PARTICULAR FOR TRANSPORTING FREIGHT BY AIR

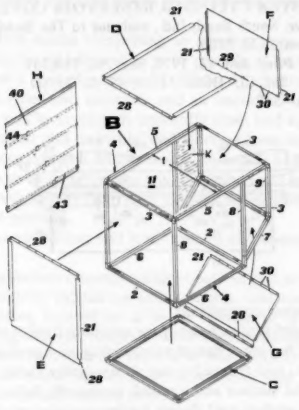
Gerhard Mittelmann, Oehningen, Fed. Rep. of Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 30, 1979, Ser. No. 62,163

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834175

Int. Cl.³ B65D *88/52*

U.S. Cl. 220—1.5 **12 Claims**



1. A container for use in transporting freight comprising

a first and second plurality of profiled rods;

a first and second plurality of tripodal corner members each having first, second and third legs;

securing means associated with said first and second profiled rods and said first and second legs of said first and second corner members for securing said first profiled rods to said first corner members and said second profiled rods to said second corner members so as to form first and second side wall frames;

a plurality of transverse profiled spar members extending between said first and second side wall frames;

securing means associated with said profiled spar members and said third leg of said corner members for securing said spar members to said first and second side wall frame members so as to form a structural frame; and

a plurality of covering means mounted on said structural frame such that said covering means is in tension and said structural frame is in compression.

4,212,407

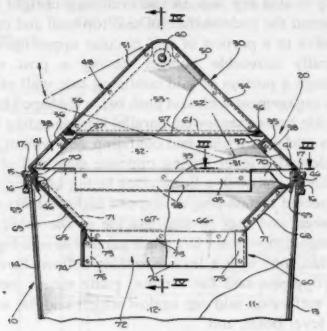
FIRE EXTINGUISHING WASTE RECEPTACLE

Bart J. Lydon, 910 Freeport Blvd., Sparks, Nev. 89431

Filed Jan. 30, 1978, Ser. No. 873,388

Int. Cl.² B65D *25/00*

U.S. Cl. 220—88 R **4 Claims**



1. A cover for a waste receptacle having upright sidewalls, each sidewall having an upper sidewall edge about the opening of the receptacle, the cover comprising an upper portion comprising a pair of upright supports extending generally upward from opposing upper sidewall edges, side means for supporting the upright supports generally parallel to each other and spaced apart, an axle between the upright supports, a swinging top swinging on the axle extending between the upright supports to cover the opening,

the cover further including a lower portion comprising a baffle comprising angled baffle walls depending from the upright supports and from the side means toward each other and leaving a baffle opening extending into the receptacle, the swinging top including two angled sides intersecting each other, the angled sides normally extending to the side means and to the upright supports to cover the opening, the swinging top further including a generally horizontal base along the bottom of the swinging top to seal the volume of the swinging top from the receptacle.

4,212,408

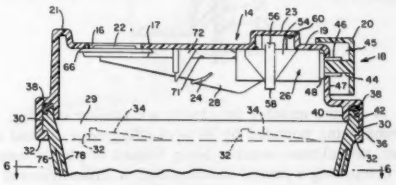
BEVERAGE DRINKING CONTAINER

Joseph F. Valenzona, Harbor City, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Nov. 3, 1978, Ser. No. 957,528

Int. Cl.² A47G *19/22*

U.S. Cl. 220—254 **3 Claims**



1. A sealable drinking container comprising:

a cup having a circular upper lip,

a cap having a confining upright side wall and a transverse confining top wall having an undersurface and releasably engageable with the upper lip of said cup in transverse

arrangement thereacross in a liquid tight seal, and having a drinking opening near the perimeter of said top wall,

a plug moveably positionable in said drinking opening of said cap,

trigger actuating means including a transverse push bar having an arcuately curved outer surface located externally to said cap beyond said confining upright wall, and adjacent the undersurface of said top wall and concentric relative to a portion of said circular upper lip, a unitary laterally moveable plunger having a post extending through a portion of said confining side wall of said cap into engagement with said push bar, a U-shaped bifurcated shackle having separated, parallel legs extending inwardly from said post within said confining side wall of said cap, an elongated lever having opposite ends and of uniform thickness and with a flat surface facing said top wall and connected to said plug at one end and rotatably mounted between said legs of said shackle at the other end for rotational movement in a plane parallel to said legs of said shackle, and with a lever shoulder defined therein on a side opposite said flat surface, guide means including a cam surface on said cap against which said flat surface of said lever bears, and

unitary spring biasing means including a unitary wire spring having a pair of legs which terminate in feet releasably secured relative to said cap and which diverge outward from engagement with said lever shoulder and bear thereagainst to bias said lever linearly to force said push bar radially outwardly from said cap and which bias said lever in rotation to rotate said plug toward engagement with said drinking opening, whereby depression of said push bar toward said confining upright wall of said cap carries said shackle toward said drinking opening so that said end of said lever attached to said shackle moves toward said drinking opening forcing the flat surface thereof facing said top wall against said cam surface which rotates said lever and said plug inwardly from said cup out of engagement with said drinking opening when said trigger is actuated.

4,212,409

CONTAINER CLOSURE MEMBERS

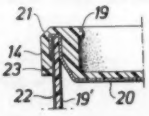
Jan-Bertil Jeppsson, Lomma, Sweden, assignor to AB Akerlund & Rausing, Sweden

Filed Apr. 9, 1979, Ser. No. 28,476

Claims priority, application Sweden, Apr. 10, 1978, 7803975; May 30, 1978, 7806216

Int. Cl.[2] B65D *41/32*

U.S. Cl. 220—276 **14 Claims**



1. A closure member for closing a container opening, said opening being bounded by an upstanding edge of said container, said closure member being formed of plastic material and comprising a central closure panel, a circumferential rim connected to said closure panel for abutting the internal surface of said upstanding edge, a circumferential edge flange connected to said rim and having a circumferential weakened area formed therein about which the edge flange can be folded to abut the outer surface of said upstanding edge, and said edge flange having cut-out portions formed therein to permit the folded edge flange to conform to said outer surface.

4,212,410

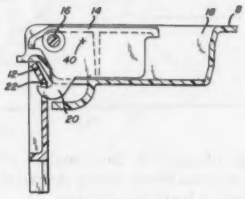
GRAVITY DUMP SHIPPING CRATE FOR POULTRY

Herbert W. Galer, Newnan Boro, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 11, 1979, Ser. No. 47,414

Int. Cl.[2] B65D *45/16*

U.S. Cl. 220—324 **4 Claims**



1. A readily dumped shipping crate comprising a container, a hinged cover therefor, and a latching assembly on said hinged cover, said latching assembly being pivotally mounted on the edge of the cover opposite the hinges thereof so that, in the closed position it lies in said cover and making latching engagement with a portion of said container, and in the unlatched position it is suspended from its pivot in a position in which it is rotated out of latching engagement with said portion of said container and extends outwardly from said cover.

4,212,411

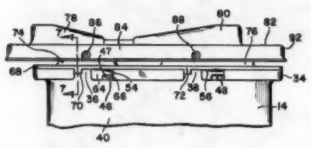
MASTER CYLINDER RESERVOIR COVER

John E. Steer, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 12, 1978, Ser. No. 914,307

Int. Cl.[2] B65D *43/08, 43/12, 53/00*

U.S. Cl. 220—347 **7 Claims**



1. A container comprising:

a housing defining a chamber for retaining fluid therein, said housing having a flange surrounding an opening to said chamber, said flange having an upwardly facing, planar, horizontal surface and a radial, outwardly facing, planar, vertical surface said flange having a series of vertically extending grooves on the peripheral surface thereof and extending through the horizontal and vertical surfaces, said vertical surface having a cover locking section adjacent one side of each of said grooves, each cover locking section comprising a portion of said vertical surface slanted at an acute angle with respect to said horizontal surface adjacent said grooves, and a second portion depressed relative to the slanted surface, the depressed surface and said slanted surface cooperating to define horizontal and vertical abutments therebetween;

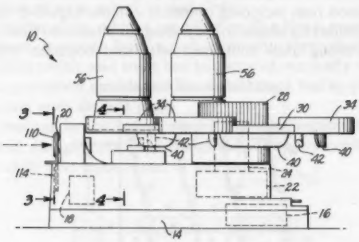
a diaphragm member surrounding the opening of said housing; and

cover means having a peripheral lip thereon, said peripheral lip having a series of detents projecting radially inwardly therefrom, said detents traveling over one of said horizontal and vertical abutments as said cover means is attached to said housing, said abutments being engageable with said detents to resist removal of said cover means from said housing, and to hold said diaphragm against said housing and seal said chamber from the surrounding environment.

4,212,412
TURNTABLE ARTICLE HOLDER WITH EJECTOR

Masaki Ikeda, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Feb. 6, 1978, Ser. No. 875,675
Claims priority, application Japan, Feb. 22, 1977, 52-20680[U]
Int. Cl.[2] F41J 5/02
U.S. Cl. 221—81 10 Claims



1. An apparatus having a base, a turntable located on said base, said turntable including a plurality of article holding locations located around its periphery, motive means for rotating said turntable about its axis, ejection means for removing articles held at said article holding locations from said turntable, and indexing means for controlling movement of said turntable so that successive of said article holding locations are adjacent to said ejection means in which the improvement comprises:

said ejection means comprising an ejection lever pivotally mounted on said base so as to be capable of being rotated between a cocked position in which said ejection lever is spaced from said turntable and an uncocked position in which said lever extends upwardly from said base generally toward said turntable, said ejection lever being capable of engaging an article held at an article holding location on said turntable which is adjacent to said lever when said lever moves from said cocked position to said uncocked position,

biasing means biasing said lever toward said uncocked position,

a cocking surface corresponding to each of said article holding locations located on said turntable, said cocking surfaces being located so as to be capable of sequentially engaging said ejection lever when said turntable is rotated and when said ejection lever is in said uncocked position so as to rotate said ejection lever from said uncocked position to said cocked position,

latch means for holding said ejection lever in said cocked position,

latch release means for moving said latch means so as to permit said biasing means to move said ejection lever from said cocked position to said uncocked position,

said indexing means comprising an escapement lever and a plurality of stop projections,

each of said stop projections corresponding to one of said article holding locations located on said turntable,

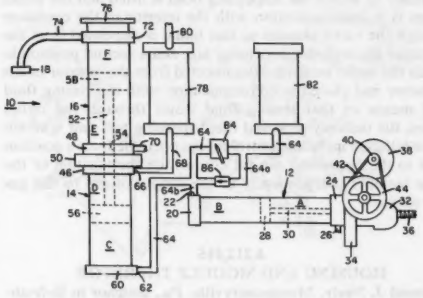
said escapement lever pivotally mounted on said base, said escapement lever being capable of being rotated between a blocking position and a non-blocking position, said escapement lever being located so as to engage one of said stop means in order to limit rotation of said turntable in said blocking position, said escapement lever being located so as not to interfere with the rotation of said turntable in said non-blocking position,

said escapement lever being located so as to be engaged by said ejection lever as said ejection lever is moved from said uncocked to said cocked position so as to be rotated to said blocking position.

4,212,413
METHOD AND APPARATUS FOR DISPENSING FRIT HAVING A HYDRAULICALLY ACTUATED PISTON

Donald L. Barber, Jr., Corning, N.Y., and Bernard G. Caron, Lewisberry, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,343
Int. Cl.[2] G01F 11/04
U.S. Cl. 222—1 7 Claims

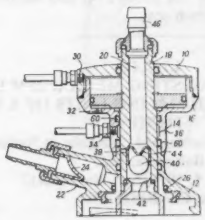


1. A method of dispensing frit material at a constant rate for sealing glass articles which comprises, supplying frit material to be dispensed into one end of a first cylinder, slideably mounting a piston within said cylinder with a piston rod attached thereto extending through the opposite end of said cylinder for sliding movement with respect to said opposite end, applying a motivating force to said piston rod externally of said cylinder for longitudinal movement within said cylinder toward and away from said one end, moving said piston rod and said piston within said cylinder toward said one end at a predetermined constant rate in response to said external motivation, dispensing frit material from said one end at a constant rate, continuously venting said cylinder to the atmosphere between said piston and said opposite end, and motivating said piston rod by selectively applying hydraulic fluid to one surface or to an opposite surface of a second piston attached to that portion of said piston rod extending through said opposite end of said cylinder.

4,212,414
LIQUID DISPENSING HEAD WITH RINSING FLUID INLET AND INSTALLATION

Jozef Beyens, Ruisbroek Aan De Rupel, Belgium, assignor to Konstruktie J. Lambrechts p.v.b.a., Ruisbroek Aan De Rupel, Belgium

Filed Oct. 30, 1978, Ser. No. 956,358
Int. Cl.[2] B67D 1/08; B65D 83/00; F37L 37/18
U.S. Cl. 222—148 11 Claims



1. An installation for dispensing liquid from a container, comprising a dispensing head adapted to be fitted to the container having a valve plunger with which the dispensing head

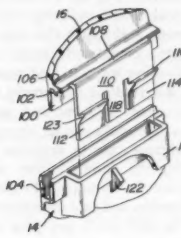
co-operates to enable liquid in the container to be dispensed through the dispensing head under pressure of a gas supplied to the container through the dispensing head, a source of pressurising gas connected to gas inlet means of the dispensing head and a dispensing tap connected to outlet means of the dispensing head through a length of delivery pipe, wherein the dispensing head has rinsing fluid inlet means connected to a source of a rinsing fluid and a valve member movable between a first position in which the rinsing fluid inlet means is closed, the gas inlet means is in communication with the interior of the container to which the dispensing head is fitted and the outlet means is in communication with the interior of the container through the valve plunger so that liquid is dispensed from the container through the dispensing tap, and a second position in which the outlet means is disconnected from the interior of the container and placed in communication with the rinsing fluid inlet means so that rinsing fluid flows through the outlet means, the delivery pipe and the dispensing tap, and wherein the installation includes control means operable from a position close to the dispensing tap for controlling the position of the valve member independently of the supply of gas to the gas inlet means.

4,212,415

HOUSING AND MODULE THEREFOR

Raymond J. Neely, Montgomeryville, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Jan. 9, 1978, Ser. No. 868,162
Int. Cl.[2] G01F *11/00*; B65D *11/18*
U.S. Cl. 222—231 **9 Claims**



1. A housing module comprising a rectangular plastic body having an integral loop projecting outwardly from opposite walls at the upper end thereof, at least one integral tab projecting from the lower end of each of said walls, each tab having a locking surface spaced from the lower end of its associated wall by a distance slightly less than the vertical height of the loop on the upper end of its associated wall, each tab being constructed so that it may extend downwardly through a loop on another housing module and be latched thereto by contact between its locking surface and a surface of the loop on the other housing module, the upper edge of said body being provided with a groove, the lower edge of said body having a tongue adapted to enter the groove on said another housing module to form a labyrinth seal.

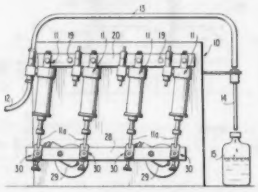
4,212,416

FINE TUNE ADJUSTING MECHANISM FOR TANDEM-OPERATED FILLING UNITS OF A FILLING MACHINE

Richard N. Bennett, Arbutus, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

Filed Jun. 5, 1978, Ser. No. 912,417
Int. Cl.[2] B65B *3/04*
U.S. Cl. 222—267 **5 Claims**

1. A fine adjusting mechanism for finely adjusting the volume dispensed by an individual filling unit of a filling machine having several such filling units operated in common from a common drive means, in which each filling unit includes a cylinder and a piston carried by a piston rod and operable to reciprocate within the cylinder to provide a suction and discharge stroke, and in which said common drive means comprises a common drive bar for connection with the piston rods of said individual filling units, eccentric drive means, and connecting means drivingly connecting said eccentric drive means with said common drive bar to convert the rotary movement of the eccentric drive means into reciprocating movement of the pistons by way of said common drive bar and the piston rods including common volume-adjusting means in said connecting means for adjusting simultaneously the volume of all filling units connected with said common drive bar,



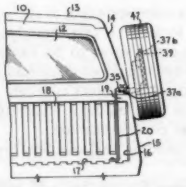
characterized in that each piston rod is operatively connected with the common drive bar by way of its own adjustable lost motion connecting means which is operable to provide a lost motion between two relatively movable members transmitting the driving movement from the common drive bar to the piston rod of a respective filling unit, and fine adjusting means for selectively adjusting the lost motion possible between said two relatively movable members to thereby provide an individual fine volume adjustment for each filling unit in addition to the simultaneous volume adjustment for all the filling units connected with said common drive bar by said common volume-adjusting means.

4,212,417

SPARE TIRE CARRIER FOR PICK-UP TRUCKS

Leroy A. Scott, R.R. #6, Paola, Kans.

Filed Dec. 22, 1978, Ser. No. 972,220
Int. Cl.[2] B62D *43/02, 43/06*
U.S. Cl. 224—42.21 **6 Claims**



1. A device for mounting a vehicle wheel and tire assembly on the side wall of a pick-up truck bed,

the pick-up truck bed having a normally horizontal floor, normally vertical side walls at the side edges of the floor and a normally horizontal rim at the top edge of the side walls comprising, in combination:

a normally vertical beam member having a lower end portion adapted to overlie and be connected to the truck bed floor and of sufficient height to extend above the top of the side wall top edge rim,

a substantially rectangular tube section having upper, lower and side walls connected at one edge thereof to one side face of the upper end of said beam member and projecting laterally therefrom in such manner as to overlie the side wall top edge rim with the lower wall thereof,

means for connecting the beam member lower end portion to the truck bed floor,

means for connecting the lower wall of the tube section to the side wall top edge rim,

a pair of L-shaped arms pivotably mounted on one end thereof on a shaft rotatably received in opposed openings in the side walls of the tube section,

a flat circular plate fixed by one face thereof to the edges of the L-shaped arms not connected to the said shaft, and

means on the other face of the plate for securing the center portion of a car wheel to said plate,

said circular plate, when a car wheel with a tire is mounted thereon, movable from a first, normally vertical, down position within said truck bed to a second, normally vertical, up position outside and above said truck bed by pivoting said arms on said shaft,

the openings in the side walls of the tube section being paired, elongate slots and means for alternately confining the shaft next to each end of said slot.

4,212,418

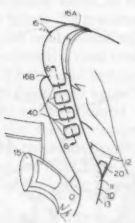
SHOULDER HOLSTER WITH IMPROVED SHOULDER STRAP ARRANGEMENT

John E. Bianchi, 1601 Wilt Rd., Fallbrook, Calif. 92028

Filed Nov. 21, 1977, Ser. No. 853,589

Int. Cl.[2] F41B *13/04*

U.S. Cl. 224—206 **4 Claims**



1. An underarm holster and harness comprising:

a holster body having a pair of holster support portions joined to said holster body and extending upward at generally an acute angle whereby one of said pair of holster support portions can extend partially from the underarm region toward the wearer's chest and the other of said pair of holster support portions can extend from the underarm region toward the wearer's back;

a harness comprising an over the shoulder strap including opposite end regions engaging a respective holster support portion of said holster body to define an engagement region between said harness and said holster support portions;

said engagement region defining a plurality of longitudinally spaced transverse slots and an end region interwoven in a serpentine path through said slots;

said end region having smooth edges and sufficient width to maintain continuous frictional engagement with the ends of said slots in addition to the surface friction between the harness and holster support portion defining said engagement region thereby adding sufficient additional frictional resistance to holster movement to support said holster and a weapon therein despite physical exertion of the wearer; and

said shoulder strap and holster support portions being continuously adjustable at the engagement portion by manually applied longitudinal force applied thereto.

4,212,419

STRIP GUIDING DEVICE

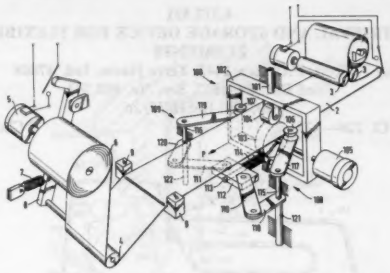
Ernst Huber, Wettingen, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,535

Claims priority, application Switzerland, Oct. 14, 1977, 12583/77

Int. Cl.[2] B65H *25/06, 25/26*

U.S. Cl. 226—23 **3 Claims**



1. A strip guiding device comprising a pair of rollers each mounted on opposite sides of the strip and in contact therewith; means mounting said rollers to pivot around an axis substantially perpendicular to the plane of the strip; means driving at least one roller; two mechanical sensing elements abutting opposite lateral edges of the strip and a differential linkage coupling the sensing elements to said mounting means so that if the strip shifts laterally the sensing elements move the mounting means to pivot the pair of rollers around said axis to impart a component of motion in the opposite direction to the shift by said at least one roller to the strip, thus moving it back, said differential linkage including means for permitting said sensing elements to move symmetrically toward or away from each other to compensate for varying strip widths without pivoting said pair of rollers about said axis.

4,212,420

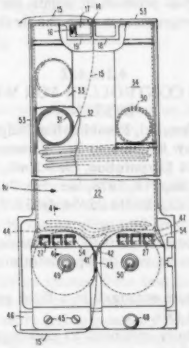
RIBBON STORAGE DEVICE

Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,755

Int. Cl.[2] B65H *17/50*

U.S. Cl. 226—118 **10 Claims**



1. A ribbon storage device comprising:

a receptacle having a compartment for storing a stack of uniformly folded ribbon,

said receptacle having an exit for withdrawing ribbon in a single strand from said stack,

support means within said receptacle for engaging said ribbon stack at the end thereof closest to said exit,

said support means having the characteristic of automatically compensating for variations in the space occupied in the storage compartment by said ribbon stack due to expansion or contraction thereof.

4,212,421

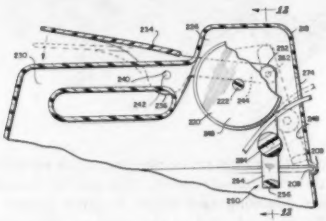
RETRIEVAL AND STORAGE DEVICE FOR FLEXIBLE ELEMENTS

Robert F. Scott, P.O. Box 1442, Terre Haute, Ind. 47808

Filed Dec. 29, 1977, Ser. No. 865,741

Int. Cl.[2] B65H *17/26*

U.S. Cl. 226—127 **2 Claims**



1. An apparatus for retrieving and storing a flexible element having first and second ends, the apparatus comprising means for retrieving the flexible element and means for providing storage of the retrieved flexible element, the retrieving means including at least one wheel, means for holding the flexible element frictionally against the periphery of the wheel, means for supporting the wheel for rotation about its axis, and means for turning the wheel in a direction to cause retrieval of the flexible element between the wheel periphery and the holding means, the support means including means for shifting the holding means from a use orientation to a slip-providing orientation in which the frictional engagement between the periphery of the wheel and the flexible element is released to provide for withdrawal of the flexible element from the storage means between the wheel periphery and the holding means, the shifting means including a trigger member and a yoke member actuable by the trigger member, the holding means being supported from the yoke member, the yoke member having a slip-providing position in which the holding means is out of frictional engagement with the elongated member, and a flexible element retrieval position in which the holding means is held in frictional engagement with the flexible element.

4,212,422

WEB POSITION CONTROLLER FOR WEB TRANSPORT SYSTEMS

Charles G. Rauchfuss, Jr., Franklinville; Ralph Herman, Cherry Hill, and Harvey R. Barton, Jr., Turnersville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,148

Int. Cl.[2] B65H *23/04*; G03B *1/48*

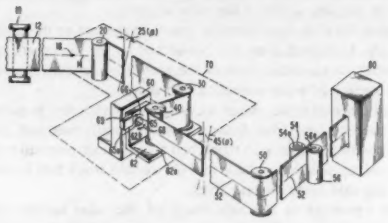
U.S. Cl. 226—196 **5 Claims**

1. A web position controller for maintaining the longitudinal center line of a moving web on a predetermined reference axis, comprising:

a support structure arranged in a fixed position relative to said reference axis;

a carriage pivotally mounted to said support structure to freely rotate about a pivot axis with the pivot axis generally aligned with said reference axis;

a first roller and a second roller rotatably attached to said carriage for conveying the moving web first over said first roller and then over said second roller, said second roller being mounted to the carriage relatively near the pivot axis and said first roller being mounted to the carriage at a point relatively remote from the pivot axis; and



said first roller being responsive to transverse displacements of the web to directly and automatically cause said carriage coupled thereto to pivot in a direction to align the longitudinal center line of the moving web conveyed across said rollers with said reference axis.

4,212,423

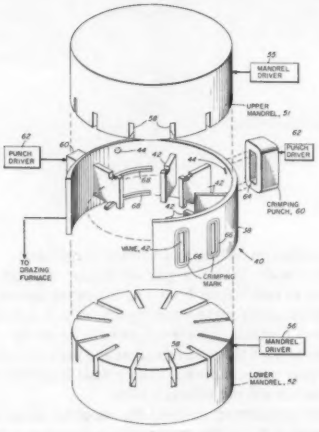
MAGNETRON ANODE MANUFACTURE

James R. Mims, Bedford, N.H., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 22, 1978, Ser. No. 944,824

Int. Cl.[2] B23K *1/04*; H01J *25/587*

U.S. Cl. 228—136 **4 Claims**



1. A method of manufacture of a cylindrical structure having radially projecting vanes comprising:

cutting a section of a tube to provide said cylindrical structure;

inserting said cylindrical structure between a mandrel and a set of punches, said mandrel having an external surface which mates with an internal surface of said cylindrical structure, said mandrel having a set of dies in the form of slots in said external surface spaced circumferentially around said mandrel, said punches being aligned with said dies;

punching a wall of said cylindrical surface form slots by driving said punches toward said dies;

removing said mandrel and said set of punches from said cylindrical structure;

placing said vanes in said slots;

positioning upper and lower portions of a mandrel within

said cylindrical structure, said upper and said lower mandrel portions being slotted to envelope said vanes;

crimping the regions in said wall of said cylindrical structure around said slots in said wall to secure said vanes in said slots, said crimping being accomplished by advancing a set of punches along respective planes of said vanes against said upper and said lower mandrel portions; and

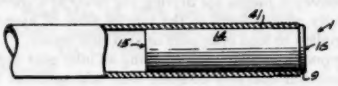
brazing said vanes to said wall.

4,212,424

THERMOSENSITIVE SAFETY VALVE

Jeffrey L. Fortune, 5820 Balao Way, South, St. Petersburg Beach, Fla. 33706

Division of Ser. No. 838,869, Oct. 3, 1977, Pat. No. 4,143,812.
This application Nov. 20, 1978, Ser. No. 962,228
Int. Cl.[2] G05D *23/08*
U.S. Cl. 236—93 R **7 Claims**



1. A method of restricting a supply of fluid in a fluid delivery system for the safety of the user of the same when the fluid temperature rises to a predetermined value, said method comprising the step of:

a flowing a stream of fluid through a fluid delivery system,

positioning a thermoresponsive reed means of a valve in a non-interrupting fluid position behind a ledge within the fluid delivery system when the temperature of the fluid is below the predetermined value, so that when the temperature of the fluid is below the predetermined value, there is no interaction of the reed means with the fluid flow,

flexing the thermoresponsive reed means into a flexed intermediate position of having an interacting relationship with the main stream of fluid flow upon the temperature of the fluid exceeding the predetermined value,

yieldably engaging the thermoresponsive reed means with the interaction with the main stream of fluid flow to allow the main stream of the fluid flow to move the reed means against a passage of the valve to partially seal the same to the fluid flow,

decreasing the pressure of the fluid flow to reinstate the thermoresponsive reed means to at least the flexed intermediate position.

4,212,425

ELECTRICALLY HEATED WINDSHIELD WASHER SPRAY NOZZLE ASSEMBLY

Horst Schlick, Schwalbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG., Schwalbach, Fed. Rep. of Germany

Continuation of Ser. No. 595,326, Nov. 6, 1975, Pat. No. 4,068,269. This application Feb. 27, 1978, Ser. No. 881,635
The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.
Int. Cl.[2] B60S *1/52*; H05B *1/00*; B67D *5/62*; B05B *1/24*
U.S. Cl. 239—133 **2 Claims**

1. A apparatus for spraying such as the windshield of an automotive vehicle comprising:

a hollow angled pipe of thermally conductive material, having a fluid inlet and a terminal portion;

a spray nozzle assembly of thermally conductive material and mounted on said terminal portion;

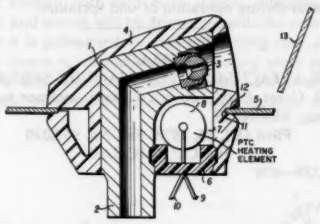
housing means of thermally insulating material enclosing said pipe and adapted for a detachable mounting upon the vehicle, adjacent the windshield thereof in a position such that fluid spray from said nozzle assembly is directed onto the exterior surface of the windshield; and forming a chamber with a downwardlyfacing opening beneath the nozzle assembly;

a PTC heating element mounted in said chamber contiguous to and in heat exchange relation with said nozzle assembly and pipe;

said PTC element having a pill-shaped structure, whose electric connections from a power supply pass through a plastic closure element to the outside;

said closure element being removably fixed in said housing and closing said downwardly-facing opening,

said housing being formed of heat-insulating thermo-plastic material and being circumferentially grooved for releasable engagement with the rim of an opening in the body surface of the vehicle,



said PTC heating element having a temperature resistance curve such that at low ambient temperatures a low resistance and at high ambient temperatures a high resistance occurs;

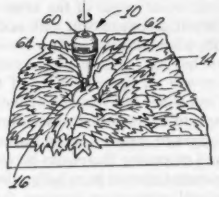
the Curie point of said curve being at or just below the freezing point temperature of water and rising sharply at or about 0° C. with its steepest portion below about 50° C.

4,212,426

PROTECTIVE HOUSING FOR IRRIGATION SPRINKLERS

Mansam Choi, Duarte, Calif., assignor to Anthony Manufacturing Corp., Azusa, Calif.

Filed Dec. 1, 1978, Ser. No. 965,341
Int. Cl.[2] B05B *3/14, 15/10*
U.S. Cl. 239—230 **9 Claims**



1. In an irrigation apparatus including an impact drive rotary sprinkler mounted for rotation about the axis of a riser, said sprinkler including a nozzle for ejecting a stream of water from the sprinkler and an impact arm having a reaction member which periodically enters said stream to impart rotary motion to said sprinkler; the improvement comprising:

a housing entirely surrounding said sprinkler and having at least one opening through said housing adjacent to and aligned with said nozzle and said reaction member to permit said stream ejected from said nozzle and from said reaction member to exit said housing, said housing including a downwardly facing generally concave cover overlying said sprinkler, said cover including a top and a downwardly extending annular wall containing said opening, said housing further including a generally frusto-conical lower wall surrounding a lower portion of said sprinkler and arranged with the apex end of said frusto-conical wall

facing downwardly and closely surrounding said riser adjacent the bottom of said sprinkler, and the larger diameter end of said frusto-conical wall is sized to cooperate with said downwardly extending annular wall of said generally concave cover, and is positioned adjacent to and immediately below said annular wall; and

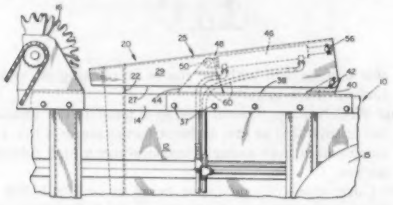
means on said housing for engaging said sprinkler, said means extending downwardly from said top and engaging an upper portion of said sprinkler thereby causing said cover to rotate with said sprinkler and maintaining said opening in alignment with said nozzle and said reaction member during operation of said sprinkler.

4,212,427

GATE ATTACHMENT FOR MANURE SPREADER

Rodger B. Grant, Port Colborne, Canada, assignor to Deere & Company, Moline, Ill.

Filed Oct. 26, 1978, Ser. No. 955,020
Int. Cl.[2] A01C *3/06*
U.S. Cl. 239—676 **4 Claims**



4. A gate attachment for blocking material from the open rear end of a manure spreader that includes a box with transversely spaced upright sides having upper edges comprising: a pair of fore-and-aft spaced brackets extending upwardly from the upper edges of each of the respective sides; a pair of upright fore-and-aft extending arms mounted by pivotal connections at their forward ends on the respective front brackets of the pair of fore-and-aft spaced brackets to swing vertically between raised and lowered positions, each arm being U-shaped in cross section and closed at their upper edges and with the respective lower edges of the arms opening downwardly and in substantial engagement with said upper edges of the respective sides when the arms in their lower positions, and each of said arms having opposite transversely spaced sides positioned respectively on opposite sides of the fore-and-aft spaced brackets; and a pair of hydraulic cylinders mounted on the rear of the respective fore-and-aft spaced brackets at a level above the lower edges of the arms when the latter are in their lower positions and extending therefrom between the sides of said arms and connected thereto in radially offset relation with respect to the pivotal connection between the fron brackets and the respective arms; and a vertical wall extending between and mounted on the rear portions of said arms so as to depend therefrom so as to block passage of material through said open rear end when said arms are in their lower positions.

4,212,428

HYDRAULIC POWER AND CONTROL SYSTEM FOR GRANULAR FERTILIZER SPREADERS

John H. Walker, Beatrice, Nebr., assignor to Dempster Industries, Inc., Beatrice, Nebr.

Filed Apr. 5, 1978, Ser. No. 893,801
Int. Cl.[2] E01C *19/20*
U.S. Cl. 239—677 **4 Claims**

1. In apparatus for spreading material such as fertilizer:

a mobile vehicle adapted to be towed during material spreading operation thereof,

said vehicle having a material carrying hopper and ground engaging wheel means adapted to be turned in response to movement of said vehicle and at a rate substantially proportional to the speed of said movement of said vehicle;

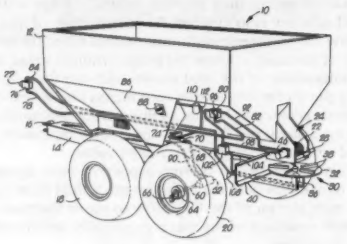
conveyor means carried by said vehicle, operably associated with said hopper and having a rotatable operating part to be driven for operating said conveyor means to remove material from said hopper at a rate substantially proportional to the speed of rotation of said operating part;

rotatable spreader means carried by said vehicle, operably associated with said conveyor means for receiving material being removed from said hopper by said conveyor means, and operable when rotatively driven for spreading said material received from said conveyor means over a zone of the ground adjacent the vehicle and of extent dependent upon the rate at which said spreader means is rotated;

a first, hydraulic motor having an inlet port and an outlet port and operably coupled with said operating part of said conveyor means for driving the latter at a speed substantially proportional to the rate of flow of hydraulic fluid applied to said inlet port of said first motor;

a second, hydraulic motor having an inlet port and an outlet port and operably coupled with said spreader means for driving the latter at a speed substantially proportional to the rate of flow of hydraulic fluid applied to said inlet port of said second motor;

hydraulic rate control valve means having an inlet port, a controlled flow outlet port and a bypass flow outlet port, said control valve means delivering at said controlled flow outlet port thereof a flow of hydraulic fluid substantially



proportional to the flow of hydraulic fluid applied to said inlet port thereof and delivering at said bypass flow outlet port thereof the remainder of said hydraulic fluid applied to said inlet port thereof;

hydraulic flow driver means having an inlet port, a controlled flow outlet port and a bypass flow outlet port,

said divider means delivering at said controlled flow outlet port thereof a substantially constant flow of hydraulic fluid and delivering at said bypass flow outlet port thereof the remainder of said hydraulic fluid applied to said inlet port thereof;

a hydraulic pump adapted to be rotatively driven,

said pump having an inlet port and an outlet port and being operable to deliver at said outlet port thereof a flow of hydraulic fluid substantially proportional to the rate at which said pump is driven;

means for operably coupling said pump with said wheel means for driving said pump at a rate substantially proportional to the speed of said movement of said vehicle in response to turning of said wheel means; and

hydraulic fluid circuit means including a portion coupling the outlet port of said pump with the inlet port of said control valve means, a portion coupling the controlled flow outlet port of said control valve means with the inlet port of said first motor, portions coupling the outlet port of said first motor and the bypass flow outlet port of said control valve means with the inlet port of said divider means, a portion coupling the controlled flow outlet port of said divider means with the inlet port of said second

motor, and return portions coupling said outlet port of said second motor and said bypass flow outlet port of said divider means with said inlet port of said pump,

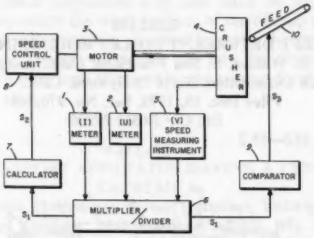
whereby said conveyor means is driven at a rate substantially proportional to the speed of movement of said vehicle, while said spreader means is driven at a substantially constant rate, for spreading said material substantially uniformly upon said zone of the ground regardless of variations in the speed at which said vehicle is being moved.

4,212,429

METHOD AND AN APPARATUS FOR CONTROLLING A CRUSHER

Jean-Philippe Cuvelier, Castres, and Henri Gistau, Paris, both of France, assignors to Societe Miniere et Metallurgique de Penarroya, Paris, France

Filed Mar. 15, 1978, Ser. No. 886,831
Claims priority, application France, Mar. 16, 1977, 77 07810
Int. Cl.[2] B02C *17/18, 25/00*
U.S. Cl. 241—26 **8 Claims**



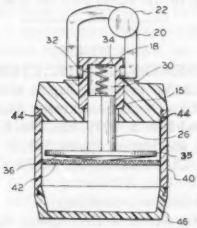
1. A method for controlling an autogenous or a semi-autogenous crusher, in which the charge within the crusher is continuously determined, and the speed of rotation of said crusher is controlled in accordance with a function which links said speed of rotation to said charge and in which said charge is determined from a resistance to rotation experienced by a motor which drives said crusher, and in which said resistance is determined by the ratio between the power absorbed by said motor and the speed of rotation of said crusher.

4,212,430

HAND-HELD PULVERIZER

John D. Dale, and David G. Knotter, both of Phoenix, Ariz., assignors to Deering Precision Instruments Co., Phoenix, Ariz.

Filed Sep. 11, 1978, Ser. No. 940,956
Int. Cl.[2] B02C *7/00*
U.S. Cl. 241—89.4 **13 Claims**



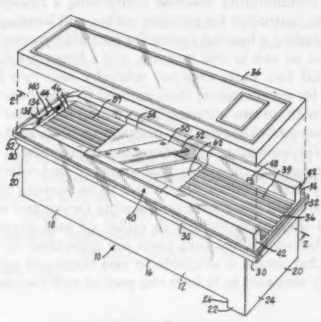
1. A hand-held pulverizer comprising: a hollow cylindrical casing, having openings at opposite ends having; a mesh screen disposed within said cylindrical casing; cover means removably secured to one end of said cylindrical casing; said cover means having a pair of aperture means forming openings on opposite sides of said cover means and a cavity communicating therebetween; rotatable means mounted in said cavity and extending above and below said cover means; handle means disposed on said rotatable means above said cover means to rotate said rotatable means; a pulverizing disc disposed on the end of said rotatable means below said cover means and opposite said handle means having a plurality of spiral-shaped blades disposed on the underside of said pulverizing disc in frictional contact with said mesh screen, whereby material placed on said screen will be driven towards the center of said screen as it is pulverized by said pulverizing disc when said rotatable means is rotated; and a collecting plate removably attached to said cylindrical casing opposite said cover means to receive the pulverized material falling through said mesh screen.

4,212,431

FOOD PROCESSING UNIT

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Sep. 25, 1978, Ser. No. 945,302
Int. Cl.[2] B02C *19/12;* **B26D** *4/42*
U.S. Cl. 241—100 **10 Claims**



1. A food processing unit adapted to receive a plurality of food processing devices and comprising a food receiving chamber and a working platform, said food receiving chamber comprising:

1. a rectangular horizontal base having a first pair of opposed, vertical, upwardly extending major side walls rising from the base;
2. a second pair of opposed, vertical, upwardly extending minor side walls rising from the base;
3. a pair of outwardly extending horizontal base surfaces each connected to an upper edge of one member of the opposed side wall pairs and each having an upwardly extending wall at its outer edge forming third and fourth pairs of opposed, vertical, upwardly extending side walls;
4. said working platform comprising an elongated base formed with a fifth pair of opposed vertical side walls said walls being formed with elongated grooves to support said food processing devices extending upwardly therefrom and with upper and lower stages extending crosswise between said side walls, said stages and said side walls defining an opening for releasably supporting a food processing device.

4,212,432

COMMINUTING MACHINE AND HOUSING WITH A ROTOR JOURNALLED IN THE HOUSING AND A TOOL CONNECTED TO THE HOUSING

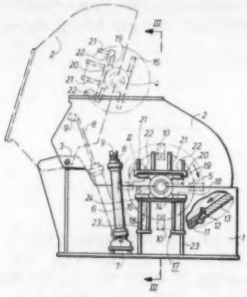
Günther Bohne, Düsseldorf; Bernhard Brans, Oberhausen; Haribert Hannebauer; Manfred Helfenbein, both of Düsseldorf, and Jürgen Theobald, Korschenbroich, all of Fed. Rep. of Germany, assignors to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 29, 1976, Ser. No. 727,941

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1975, 2543769

Int. Cl.[2] B02C *13/04*

U.S. Cl. 241—285 B 4 Claims



1. In a comminuting machine comprising a two-part housing, a rotor journalled for rotation within said housing, journal means including a bearing casing for rotatably journalling said rotor about an axis in said housing, and a hinge pivotally connecting said two parts together whereby said two parts are separable for maintenance, tools secured to said rotor for rotation therewith, means stationarily mounted in at least one part of said two-part housing for interacting with said tools in effecting the comminuting action, the improvement wherein said bearing casing of said journal means of said rotor is selectively supported in either of said two parts forming said housing whereby said rotor with said bearing casing and said tools connected thereto is located in either of said parts of said two-part housing when said parts are separated for maintenance so that access is available to said rotor and said means stationarily mounted in at least one part of said two-part housing.

4,212,433

COP SUPPLYING APPARATUS FOR AUTOMATIC WINDING MACHINE

Isamu Matsui, Kyotoshi, and Buro Suganuma, Nagaokakyoshi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

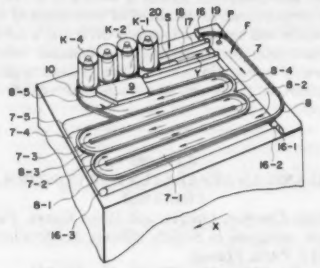
Filed Jul. 27, 1978, Ser. No. 928,599

Claims priority, application Japan, Jul. 29, 1977, 52-92081

Int. Cl.[2] B65H *54/20, 67/06*

U.S. Cl. 242—35.5 A 13 Claims

1. An apparatus for transferring and supplying cops to an automatic winding machine having a plurality of winding units each with a magazine including magazine cans comprising an automatic cop feeding apparatus, and a cop supplying truck which is so provided as to move in the lengthwise direction of the automatic winding machine, while storing cop containers containing cops, between the magazines provided on each of the winding units of the automatic winding machine, wherein said cop supplying truck comprises a first conveyer device for storing and conveying a plurality of cop containers which are put on the truck and contain a cop extending vertically therein, a take-out device for taking only the first cop container among an array of the conveyed cop containers when said truck passes by a magazine, a second conveyer device for conveying only one unit of the thus taken out cop container, and a device



for feeding the cop contained in the taken out cop container from the cop supplying truck into a magazine can of the magazine.

4,212,434

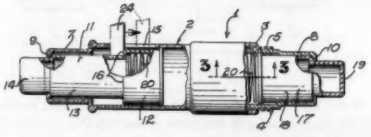
THEFT DETERRENT TOILET ROLL SPINDLES

Randall B. Walker, S. San Francisco, Calif., assignor to The Bobrick Corporation, North Hollywood, Calif.

Filed Dec. 18, 1978, Ser. No. 970,340

Int. Cl.[2] B65H *19/00*

U.S. Cl. 242—55.2 1 Claim



1. A theft minimizing toilet roll spindle for dispensing toilet tissue rolled about a distructable core and utilizing a holder having a pair of opposed journal sockets, the spindle comprising:

a. a thin walled sleeve slidable received in the core contiguous to the internal surface thereof, the sleeve having an axially extending slot confronting the core;

b. a pair of thin walled tubular stems received in opposite ends of the sleeve having end portions of reduced diameter dimensioned to be slidably received in the journal sockets;

c. at least one of the tubular stems having an external shoulder exposed to the slot for engagement by a hand tool upon removal of the core;

d. both of the stems having internal shoulders;

e. and a spring interposed between the shoulders to urge the reduced ends of the stems into the journal sockets.

4,212,435

SEATBELT RETRACTOR

Takashi Kawaharazaki, Toyoake, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Feb. 5, 1979, Ser. No. 9,675

Claims priority, application Japan, Feb. 9, 1978, 53-15171[U]

Int. Cl.[2] A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107 4 Claims

1. A seatbelt retractor comprising:

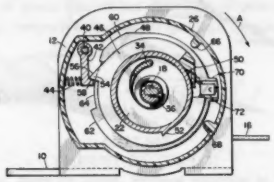
spring means in which a first spring and second spring weaker in biasing force than the first spring are connected in series and further connected to a seatbelt take-up shaft so as to render the force for winding up the seatbelt;

ratchet means comprising a pawl for engagement with a latch gear provided at a connecting portion between the

first and second springs so as to prevent the biasing force of the first spring from acting on the take-up shaft;

a friction plate cooperating with said pawl wherein the turning force of said take-up shaft is imparted thereto by a frictionally contacting means so as to engage said pawl with the latch gear; and

camplate means connected to the take-up shaft through a one-way clutch comprising a gear wheel which rotates



together with said take-up shaft having only one latch formed thereon and an arm projecting from said camplate means which cooperates with said latch on said gear wheel, by which the wind-up force of the take-up shaft is imparted when relative rotation between the camplate means and the take-up shaft is one turn, for disengaging said latch gear from the pawl by the turning force of the take-up shaft.

4,212,436

TAPE TRANSPORT APPARATUS HAVING A CENTRAL CAPSTAN

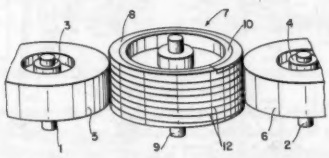
Klaus Schoettle, Heidelberg; Werner Hoffmann, Ludwigshafen, and Eduard Käemmer, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 969,552

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2755932

Int. Cl.[2] G03B *1/04*

U.S. Cl. 242—192 **10 Claims**



1. In a tape transport apparatus comprising a capstan, take-up and supply reels and biasing means, said reels being capable of being urged toward the capstan by the biasing means for transporting the tape from the supply reel to the take-up reel, said capstan having a resilient peripheral portion with concentric regions of different resilience which are substantially inelastic in their circumferential direction, and having a driving surface for frictionally driving at least one of the take-up and supply reels,

the improvement that at least one annular insert is provided within said resilient peripheral portion for producing a concentric region of lower resilience than the resilience of the remainder of the peripheral portion while the frictional driving surface of the peripheral portion is maintained effective, said at least one annular insert being elastically deformable in the radial direction so as to merely reduce the radial flexibility of the peripheral portion, and lacking elastic deformability in the circumferential direction so as to enhance the non-flexibility of the peripheral portion in the circumferential direction.

4,212,437

TAPE CASSETTE

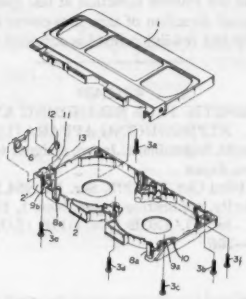
Haruo Shiba, and Masatoshi Okamura, both of Tokyo, Japan, assignors to TDK Electronics Company Limited, Tokyo, Japan

Filed Aug. 14, 1978, Ser. No. 933,581

Claims priority, application Japan, Dec. 12, 1977, 52-166794[U]

Int. Cl.[2] G03B *1/04*

U.S. Cl. 242—199 **6 Claims**



1. A tape cassette cover locking mechanism for a tape cassette having a first and second half-case comprising:

a cover lockably mounted on said first half-case;

a lock plate mounted on said second half-case for engaging said cover;

a rib member mounted on said second half-case; and,

a plate spring fixedly mounted on said rib, one end of which engages said lock plate.

4,212,438

FAST REWIND MECHANISM FOR BIDIRECTIONAL TAPE TRANSPORTS FOR CASSETTES

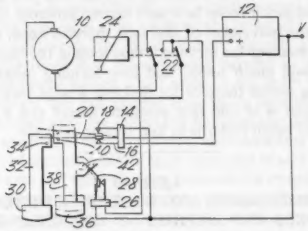
Etienne A. M. Schatteman, Wemmel, Belgium, assignor to Star S.A., Brussels, Belgium

Filed May 16, 1978, Ser. No. 906,311

Claims priority, application France, May 18, 1977, 77 15380

Int. Cl.[2] G11B *15/30*

U.S. Cl. 242—201 **9 Claims**



1. In a recording and playback apparatus for tapes stored in cassettes, having a bidirectional drive for transporting the tape from reel to reel of a cassette in either direction at normal speed, including drive means for both the reels engageable with the take-up reel in the direction of tape movement at normal tape playback or recording speed, and means including an electrically powered device operable in response to an electrical pulse for reversing said bidirectional drive and coincidentally engaging said drive means with the supply roll; the improvement comprising:

manually actuable fast forward and fast rewind control elements;

means for increasing the speed of said drive means in response to the actuation of either said control elements; and

circuit means including a switch operated responsive to the actuation only of said fast rewind control element for producing an electrical pulse and conducting said pulse to operate said electrically powered device to reverse said bidirectional drive and coincidentally engage said drive means with the supply reel, to transport the tape from reel to reel in the reverse direction at fast speed regardless of the original direction of tape movement at normal speed when the fast rewind control is actuated.

4,212,439

MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

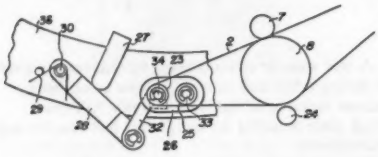
Fumio Sekiguchi, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,194

Claims priority, application Japan, Nov. 1, 1977, 52-131034

Int. Cl.[2] G03B *1/04*; G11B *15/32*

U.S. Cl. 242—206 **13 Claims**



1. An apparatus for recording and/or reproducing information signals on magnetic tape comprising magnetic tape supply and take-up reel means, a magnetic head assembly disposed along a magnetic tape path between said supply and take-up reel means, a capstan and pinch roller for driving the magnetic tape therebetween at a constant speed, said pinch roller having a first position against the capstan and a second position away from the capstan, tape amount increasing means for providing a predetermined increase in the length of tape extending from said capstan toward said supply reel means, said tape amount increasing means comprising a braking member for pinching said tape between said braking member and said pinch roller when said pinch roller is in said second position, thereby preventing the movement of said tape therebetween, and a loop-forming member for forming a tape loop in the tape extending beyond said pinch roller, said loop-forming member having activating means therefor for defining a large loop when said pinch roller is in said first position thereof and a small loop when said pinch roller is in said second position.

4,212,440

CAMOUFLAGED AND DECEPTIVE DISTORTED VEHICLE AND METHOD OF ASSEMBLING SUCH VEHICLES

Carlisle K. Ferris, 50 Moraine Rd., Morris Plains, N.J. 07950

Filed May 1, 1978, Ser. No. 901,799

Int. Cl.[2] B64D *7/00*

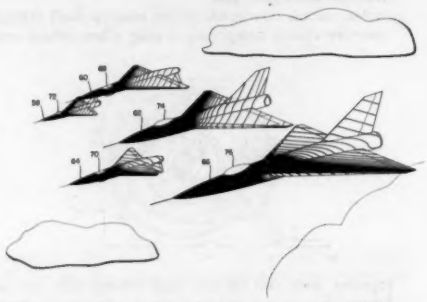
U.S. Cl. 244—1 R **70 Claims**

1. A camouflaged and deceptive distorted vehicle comprising:

(a) a top and bottom surface,

(b) said surfaces having two pairs of coordinate sections including a first fore and aft coordinate sections pair extending from adjacent the front edge of said vehicle to adjacent the rear edge of said vehicle and a second left and right coordinate sections, pair, extending from adjacent the one side edge of said vehicle to adjacent the opposite side edge of said vehicle,

(c) at least one of said two pairs of coordinate sections of said top surface being colored, and



(d) said color on said at least one of said two pairs of coordinate sections at said top surface graduating from dark to light beginning dark adjacent one edge on one section and ending light on the other adjacent edge of said one section.

4,212,441

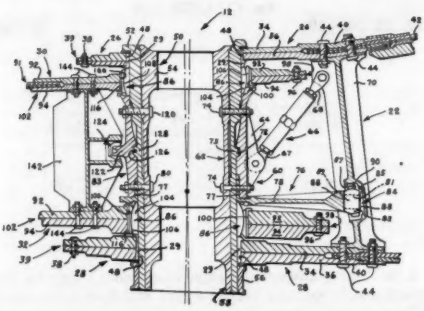
WING PIVOT ASSEMBLY FOR VARIABLE SWEEP WING AIRCRAFT

Leonard A. Ascani, Jr.; Burton C. Rickey, both of Palos Verdes Estates; Merle E. Riggs, Woodland Hills, and Andrew R. Shoemaker, La Habra, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 11, 1978, Ser. No. 905,063

Int. Cl.[2] B64C *3/40*

U.S. Cl. 244—46 **7 Claims**



1. In a sweep wing aircraft having a fuselage, a pair of movable wings and means for moving said wings to a plurality of positions, the improvement therein residing in a pair of pivot assemblies, each of said pair of pivot assemblies comprising a pivot pin, means operably connected between said fuselage and said pivot pin for mounting said pivot pin adjacent said fuselage, means operably connected between said pivot pin and said fuselage for preventing said pivot pin from rotating, means operably connected between one of said pair of wings and said pivot pin for movably securing said one wing to said pivot pin, means operably connected between said pivot pin and said one wing for movably supporting said one wing with respect to said pivot pin and for transferring vertical shear loads from said one wing to said pivot pin, said means for movably supporting said one wing with respect to said pivot pin being an outboard shear fitting in the form of an approximately 100° arc

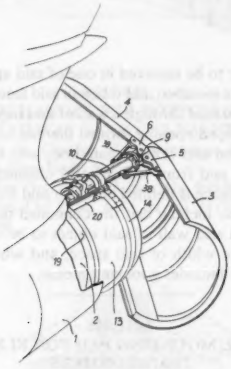
of a cylinder secured to said pivot pin juxtaposed said means for preventing rotation of said pivot pin and having the inner radius of said rotation prevention means matched to the outer radius of said pivot pin, a tongue protruding from said outboard shear fitting and a shear bearing operably connected to said one wing and movably engaging said tongue on said outboard shear fitting, and means operably connected between said pivot pin and said fuselage for transferring said vertical shear loads from said pivot pin into said fuselage whereby each of said pair of pivot assemblies movably secures one of said pair of wings, respectively, to said fuselage of said aircraft.

4,212,442

THRUST REVERSER

Etienne Fage, Jouy en Josas, France, assignor to Societe ASTECH, Meudon La Foret, France

Filed Feb. 24, 1978, Ser. No. 881,045
Claims priority, application France, Mar. 4, 1977, 77 06359
Int. Cl.[2] B64D *33/04*
U.S. Cl. 244—110 B **9 Claims**



1. A thrust reverser for a jet engine of an aircraft, comprising:

two symmetrical doors pivotally mounted about an axis which is transverse and substantially diametrical to the jet of said engine, and which is disposed downstream of the jet exhaust pipe thereof, each of said doors being pivoted for movement between a folded or stowed position in which said doors are clear of said jet, and an unfolded or opened out position in which said doors are disposed transversely and in the path of said jet;

at least one longitudinal power driven control jack for the simultaneous control of said doors, said jack comprising two aligned pistons, rigidly connected by a common intermediate piston rod, each piston being housed in a corresponding cylinder,

first connecting means interconnecting said cylinders to form a rigid self-supporting cylinder assembly having an upstream cylinder and a downstream cylinder;

second connecting means independent of said first connecting means, said second means connecting said upstream cylinder to said jet engine;

at least two connecting rods each having one end pivotally connected to said piston rod and the other end pivotally connected to a door, and

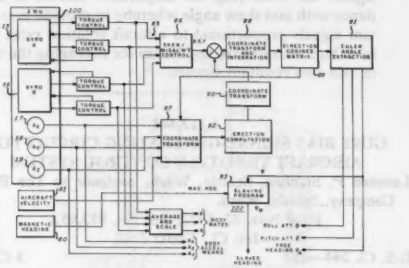
a hinge for each door mounted directly on said downstream cylinder.

4,212,443

STRAPPED DOWN ATTITUDE AND HEADING REFERENCE SYSTEM FOR AIRCRAFT EMPLOYING SKEWED AXIS TWO-DEGREE-OF-FREEDOM RATE GYROS

Damon H. Duncan, and Martin S. Klemes, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed May 18, 1978, Ser. No. 907,228
Int. Cl.[2] G05D *1/10*
U.S. Cl. 244—177 **6 Claims**



1. In a unitary strapped down attitude and heading reference system for an aircraft having first, second and third primary rotation axes and including a system enclosure, said system comprising,

(a) an inertial reference assembly module including

(i) a base support member having at least first and second mutually orthogonal reference surfaces and adapted to be fixed within said enclosure with said surfaces disposed in first and second orthogonal planes normal respectively to first and second primary aircraft axes,

(ii) first and second two-degree-of-freedom rate gyroscopes, each gyroscope having a housing including a rotor and a motor for spinning said rotor about a spin axis and pick-off and torquer means cooperative with said rotor and defining two mutually orthogonal input axes normal to said spin axis and means responsive to said pick-off means for supplying two output signals proportional respectively to aircraft rotation rates about said two input axes,

(iii) means for aligning and securing said first and second gyroscope housing relative to said first and second base support reference surfaces respectively such that their spin axes are respectively normal thereto and parallel to said first and second aircraft axes and their input axes are respectively skewed at an angle on the order of forty-five degrees relative to the third primary aircraft axis, said gyroscope input axes thereby lying parallel to the slant height of a cone having a half angle on the order of forty-five degrees, the axis of said cone being parallel to said third aircraft axis, the difference between the output signals of the first of said gyroscopes corresponding to components of aircraft rotation rates about one of said first and second axes and the difference between the output signals of said second of said gyroscopes corresponding to components of aircraft rotation rates about the other of said first and second axes, and the output signal components of both gyroscopes corresponding to aircraft rotation rates about said third axis, said last-mentioned signal components being normally equal,

(b) computer means responsive to said output signals of said inertial reference assembly module including

(i) means responsive to the signal outputs of said first gyroscope for providing a signal corresponding to the difference therebetween and scaling means for modifying the amplitude thereof in accordance with said skew angle whereby to provide a resultant signal proportional to aircraft rotation rate about said first aircraft axis,

(ii) means responsive to the signal outputs of said second

gyroscope for providing a signal corresponding to the difference therebetween and scaling means responsive to said difference signal for modifying the amplitude thereof in accordance with said skew angle whereby to provide a resultant signal proportional to aircraft rotation rate about said second aircraft axis, and

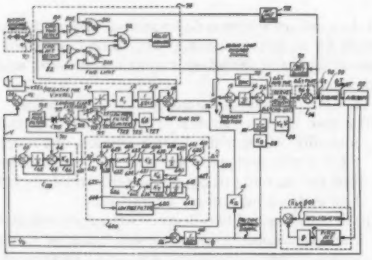
(iii) means responsive to the signal outputs of said first and second gyroscopes respectively for providing first and second signals corresponding respectively to the sum thereof and scaling means responsive to each of said sum signals for modifying the amplitudes thereof in accordance with said skew angle whereby to provide two resultant signals proportional to aircraft rotation rates about said third aircraft axis, and means for averaging the values of said two resultant signals.

4,212,444

GUST BIAS SIGNAL-GENERATING CIRCUIT FOR AIRCRAFT THROTTLE CONTROL SYSTEM

Leonard P. Stephan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 22, 1977, Ser. No. 853,952
Int. Cl.[2] G05D *1/08*
U.S. Cl. 244—182 **3 Claims**



1. In combination:

a shear detector circuit responsive to signals representative of airspeed and longitudinal acceleration for providing an output signal; and

gust bias signal-generating means responsive to said output signal for providing a gust bias signal representative of increased level of turbulence, means for limiting the fly fast command provided by said gust bias signal to about 10 knots, said gust bias signal-generating means including switching means responsive to landing flap extension for doubling the amplitude of said gust bias signal in the event of turbulence during landing.

4,212,445

ADJUSTABLE MOUNTING, AND SECURING AND FASTENING ASSEMBLY WITH CHANNEL BAR

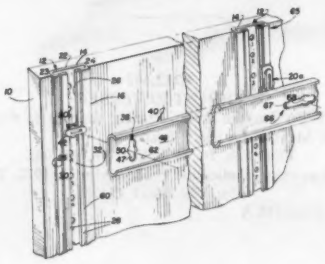
Magnus F. Hagen, 434 Panorama Dr., Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 808,999, Jun. 22, 1977. This application Jun. 15, 1978, Ser. No. 915,818
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—245 **11 Claims**

1. A mounting and securing assembly wherein an object having a keyhole-shaped opening or openings can be adjustably and removably mounted on and secured to a wall or partition, said assembly comprising:

a channel-like member disposed in or attached to said wall or partition and having a rear wall formed with a plurality of aligned juxtapositioned apertures extending longitudinally thereof; a pair of opposite side walls; a front wall having a longitudinal slot formed therein, and positioned opposite said apertures, and a pair of flange members formed as part of said front wall and defined by said longitudinal slot, said channel like member having a substantially "C"-shaped cross-sectional configuration;

a fastener member formed to be removably mounted in said channel-like member and including a central main body having a maximum diameter equal to, or less than, the width of said longitudinal slot; a front locking bar member; a rear locking bar member wherein said main body is disposed therebetween, said rear locking bar member being received and locked in said channel member when said fastener member is rotated through 90°; and a rearwardly extending stud member positioned on the rear



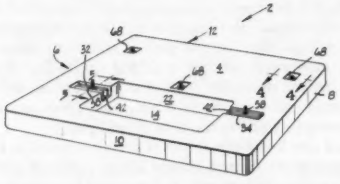
locking bar to be received in one of said apertures in said channel-like member; and wherein said front locking bar is formed to extend through a wall of said object having said keyhole-shaped opening formed therein, said object being supported on said central main body and held in engagement with said front wall of said channel like member, wherein a space is defined between said front locking bar and said rear locking bar, the combined thickness of said flanges and said wall of said object to be mounted being equal to the width of said space, and wherein said rear locking bar includes a locking means.

4,212,446

UNIVERSAL MOUNTING PAD FOR ELECTRICAL TRANSFORMERS

Edward J. Domanick, and Lewis B. Haskins, both of Littleton, Colo., assignors to Johns-Manville, Denver, Colo.

Filed Feb. 14, 1975, Ser. No. 550,094
Int. Cl.[2] F16M *5/00*
U.S. Cl. 248—678 **5 Claims**



1. A universal mounting pad for anchoring any of several different sizes of electrical transformers, which comprises

a generally flat deck having a top surface, two ends and two transverse sides;

ground engaging support means extending downwardly from said deck;

an opening extending through said deck adjacent one of said ends and disposed between said transverse sides;

two oppositely disposed recesses in said deck extending outwardly from said hole, each recess disposed parallel to said ends;

each of said recesses having a flat bottom surface recessed

below said top surface of said deck by a predetermined depth;

a channel mounting member secured within each of said recesses, said member having a depth substantially equal to the depth of said recess and a longitudinal axis substantially aligned with the longitudinal axis of said recess, with the open portion of said channel mounting member being on the uppermost surface of said member and adapted to retain therein connecting means which attach the transformer to said pad;

a plurality of additional recesses in said deck, each recess having a bottom surface depressed below the level of said top surface of said deck; and

anchoring means cooperating with said additional recesses to anchor said pad to the underlying ground to substantially prevent the movement of said pad in lateral and vertical planes, said anchoring means comprises a shaft having at one end thereof earth engaging means and near the other end thereof a radial collar which engages the bottom of the additional recess and screw threads for engagement with a nut.

4,212,447

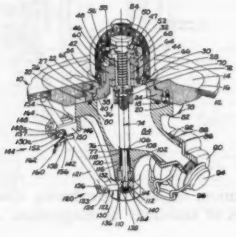
OPERATING HANDLE FOR BOTTOM OPERATED RAILWAY TANK CAR VALVE

Gunter R. Behle, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,966

Int. Cl.[2] F16K *1/48, 31/60, 35/10*

U.S. Cl. 251—98 **9 Claims**



1. In a railway tank car bottom outlet lading valve assembly, an operating handle assembly for a lading valve comprising: an operating shaft extending vertically within a lading outlet chamber having a non-round shaft tool connection portion near the bottom thereof; an operating handle pivotably mounted on the outlet chamber adjacent said shaft non-round connection portion; said operating handle including a handle non-round connection slot which engages said shaft non-round connection portion; a handle-storing bracket for the distal end of the operating handle mounted above said shaft non-round portion adjacent the tank car bottom; said bracket being U-shaped and including a removable pin extending between opposite arms of the bracket for maintaining the distal end of said handle in a stored position within said bracket, and whereby said handle may be pivoted to a generally horizontal position to rotate the shaft through engagement of the handle non-round connection slot with the shaft non-round portion for at least 180° without disengagement, and thus move the lading valve between open and closed positions, and whereby, after use, the distal end of the handle may be returned to the stored position in the handle-storing bracket.

4,212,448

SHUT-OFF VALVE

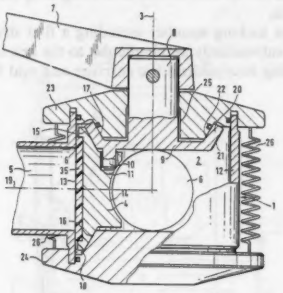
Günther Wulf, Wangen, Fed. Rep. of Germany, assignor to Hermann Waldner KG, Wangen, Fed. Rep. of Germany

Continuation of Ser. No. 764,231, Jan. 31, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,381

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1976, 2618115

Int. Cl.[2] F16K *25/00*

U.S. Cl. 251—184 **3 Claims**



1. A shut-off valve comprising:

a housing having a substantially vertically extending cylindrical bore therein;

at least two pipe connections radially opening into the housing;

a rotatable actuator comprising an actuating spindle substantially coaxial with the bore and an actuating part extending radially outwardly from the spindle and comprising an upper downwardly and radially outwardly facing wedge surface;

means in the bore defining a first lower upwardly and radially outwardly facing wedge surface;

a closure member supported within the bore, said closure member defining opposite upper and lower wedge surfaces coaxial with the longitudinal axis of the housing, said lower wedge surface of the closure member being in facing abutment with the first lower wedge surface and said upper wedge surface of the closure member being in facing abutment with the wedge surface of the actuator;

a upper cover on the upper end of the housing through which the actuating spindle extends;

a tubular bearing bush in direct contact with and between the actuating spindle and the cover;

means in contact with the upper end of the bush for biasing it against the actuating part and it against the closure member;

a cap, fixedly secured to and extending over the upper end of said cover, through which the actuating spindle extends; and

said biasing means comprises a biasing member in direct contact with and between the cap and the upper end of the bush.

4,212,449

SWING-ARM DEVICE FOR A VEHICLE LIFT

Tozaburo Tsujimura, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Oct. 3, 1978, Ser. No. 948,204

Claims priority, application Japan, Dec. 22, 1977, 52-173403[U]

Int. Cl.[2] B60S *13/00*

U.S. Cl. 254—89 H **1 Claim**

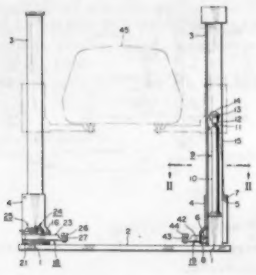
1. In a vehicle lift in which a carriage is raised and lowered

up and down a support pillar, a swing arm device for supporting a vehicle comprising:

(a) a first arm having first and second ends disposed substantially horizontally, its first end being pivotally coupled about a vertical axis to said carriage;

(b) a second arm having a first and second end disposed substantially horizontally, the first end thereof being pivotally coupled to the second end of the first arm, the pivotal coupling between said first and second arms being remote from the carriage and about a vertical axis, the second end of said second arm being adapted to support a vehicle;

(c) a first locking member including a first strut which extends substantially perpendicular to the axis of the pivotal coupling intermediate the carriage and said first arm and



first locking means for adjustably fixing the distance between two points located on said carriage and said first arm, respectively, substantially away from the axis of said pivotal coupling, said first locking means being coupled to said first strut whereby the pivoting of said first locking arm is locked; and

(d) a second locking member including a second strut which extends substantially perpendicular to the axis of the pivotal coupling intermediate the first and second arms and second locking means for adjustably fixing the distance between two points located on said first arm and said second arm, respectively, substantially away from the axis of said pivotal coupling, said second locking means being coupled to said second strut whereby the pivoting of said second arm is locked.

4,212,450

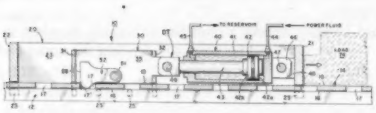
JACKING APPARATUS

R. Bruce Lambert, Chatsworth, Calif., assignor to Santa Fe International Corporation, Orange, Calif.

Filed Aug. 25, 1978, Ser. No. 937,030

Int. Cl.³ B66F *1/04*

U.S. Cl. 254—108 **7 Claims**



1. A jacking apparatus for moving a load over a rail having a plurality of longitudinally-spaced slots therealong, said apparatus comprising:

a load frame adapted to move over said rail for moving a load therewith,

a carriage inside said frame adapted to move over said rail,

a pawl member mounted on said carriage for rotation about a transverse pivot axis between two angular positions,

a reciprocating, double-acting, hydraulic cylinder coupled between said carriage and said frame for producing relative movements therebetween,

said pawl member having a claw foot adapted to mesh with the consecutive slots on said rail,

said claw foot having a pair of outwardly extending side claws which are symmetrically disposed relative to a plane containing said pivot axis and the longitudinal axis of said pawl member, and

said claw foot engaging said rail during one stroke of said cylinder, and becoming disengaged from said rail during the reverse stroke of said cylinder, depending on the angular position of said pawl member.

4,212,451

INSTALLATION FOR THE PRODUCTION OF CONTINUOUSLY CAST BILLETS

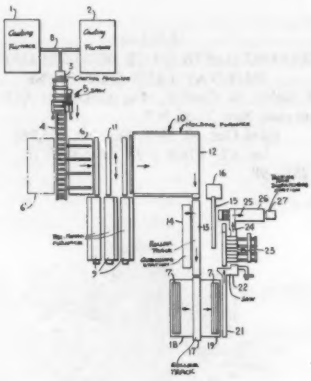
Hansjörg Klotzbücher, Muri; Erwin Kolb, Illnau, and Bernhard Hilge, Adliswil, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 691,729, Jun. 1, 1976. This application Apr. 5, 1978, Ser. No. 893,802

Claims priority, application Switzerland, Jun. 6, 1975, 7342/75

Int. Cl.² B22D *11/12*; C22D *1/04, 1/06*

U.S. Cl. 266—50 **10 Claims**



1. An installation, for use in producing continuously cast billets, of alloys of aluminum or magnesium, comprising, in combination,

a horizontal continuous casting machine operable for casting the billets,

a horizontal conveyor connected up to said casting machine for receiving the cast billets from said machine while warm,

a movable cutting device operable to move synchronously with said conveyor for cutting the billets as they are transported while warm by said conveyor,

a heat treating unit disposed adjacent said conveyor and being operable to receive said cut warm billets from the conveyor and to heat treat them thereafter,

a reserve magazine provided between said heat treating unit and the end of the conveyor track remote from the casting machine,

a cooling unit adjacent and downstream of said heat treating unit for receiving the heat treated billets for controlled cooling thereof,

a cutting device adjacent and downstream of said cooling unit for cutting the heat treated billets to the desired final length, and

providing at the end of the production line an automatic stacking and packing device.

2. An installation, for use in producing continuously cast

billets, of alloys of aluminum or magnesium, comprising, in combination,

a horizontal continuous casting machine operable for casting the billets,

a horizontal conveyor connected up to said casting machine for receiving the cast billets from said machine while warm,

a movable cutting device operable to move synchronously with said conveyor for cutting the billets as they are transported while warm by said conveyor,

a heat treating unit disposed adjacent said conveyor and being operable to receive said cut warm billets from the conveyor and to heat treat them thereafter,

a reserve magazine provided between said heat treating unit and the end of the conveyor track remote from the casting machine, and

a stacking and packing unit downstream of said heat treating unit operable to receive said billets off the end of the production line and stack and pack them.

4,212,452

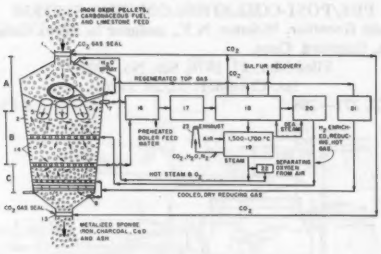
APPARATUS FOR THE DIRECT REDUCTION OF IRON ORE

Jack Hsieh, Rte. 4, Box 9770, Richland, Wash. 99352

Division of Ser. No. 879,250, Feb. 21, 1978, Pat. No. 4,160,663. This application Apr. 30, 1979, Ser. No. 34,807

Int. Cl.[2] F27B *1/20*

U.S. Cl. 266—156 **2 Claims**



1. Apparatus for the direct reduction of iron ore comprising

(a) a fixed shaft furnace,

(b) a partition extending across the upper portion of said shaft furnace,

(c) at least one conduit extending downwardly from said partition,

(d) means for feeding ore into said shaft furnace above said partition,

(e) a discharge grate extending across the lower portion of said shaft furnace,

(f) means for introducing heated oxygen, substantially free of inert gases, and steam above said partition and for introducing reducing gas between said partition and said discharge grate.

(g) means for withdrawing top gas immediately below said partition,

(h) means for cooling, purifying and dehumidifying said top gas and introducing a portion of said cooled and purified top gas into said shaft furnace adjacent said discharge grate,

4,212,453

PLANT FOR REFINING PIG IRON

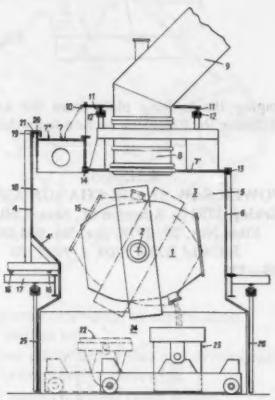
Friedrich Laimer, Perg, and Herbert Herrmann, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 2, 1978, Ser. No. 874,400

Claims priority, application Austria, Feb. 21, 1977, 1133/77

Int. Cl.[2] C21C *5/40*

U.S. Cl. 266—158 **4 Claims**



2. A plant for refining pig iron by means of oxygen or gases enriched with oxygen, of the type including: a converter; a chamber accommodating the converter, said chamber having an upper part and a lower part formed from stationary chamber walls and a ceiling; a principal hood connected to said ceiling; a charge opening and a secondary hood covering it provided in said upper part of said chamber; and closing means for closing said charge opening, characterized in that

said ceiling has a stationary part and a displaceable part, said displaceable part surrounding and being united with said principal hood so as to form a displaceable unit above said converter,

said secondary hood covering said charge opening is united with said stationary part of said ceiling, and

said closing means includes a sliding door and rail means for guiding said sliding door, said sliding door being designed as a plane, perpendicularly arranged plate and a slag protection means extending downwards at an inclined angle toward the chamber interior being provided on said sliding door at the lower end of the inner side thereof.

4,212,454

OPERATION TABLE

Norman J. Lee, London, England, assignor to Matburn (Holdings) Limited, London, England

Filed Apr. 24, 1978, Ser. No. 899,107

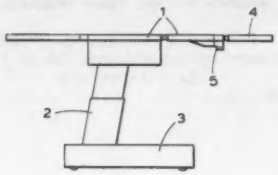
Claims priority, application United Kingdom, Apr. 28, 1977, 17770/77

Int. Cl.[2] A61G *13/00*

U.S. Cl. 269—328 **4 Claims**

1. A surgical operation table comprising a platform with a main section and an end extension section which may be removably fitted adjacent an end of the main section, wherein the said extension section has a pair of support arms removably engageable in complementary sockets secured to the main section, at least one of the sockets being provided with a spring locking plate which is engageable with a depending locking abutment portion carried by a support arm inserted in the socket to prevent the arm being withdrawn from the socket,

said spring locking plate engaging the underside of said depending locking abutment portion, and means being provided



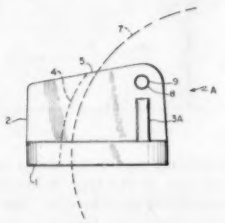
for disengaging the locking plate from the arm when it is desired to remove the extension section from the main section.

4,212,455

POWER SAW BLADE CHANGE ASSIST

James N. Eckley, 1752 N. Atherton St., State College, Pa. 16801

Filed Nov. 29, 1978, Ser. No. 964,683
Int. Cl.[2] B25B *1/08, 1/10, 1/20*
U.S. Cl. 269—236 **8 Claims**



1. A device for use in changing a power saw blade, said device comprising:

a horizontal base portion for providing a stable base;

a vertical holder on top of said horizontal base portion, said vertical holder having a vertical groove therethrough extending downward through said horizontal base portion, said groove having a curved rear portion and being large enough for receiving the saw blade therein, said groove further having a non-constant width, said curved rear portion of said groove having a first width large enough for accomodating the set of the teeth of the saw blade, and said groove having a front portion having a second width less than said first width; and

a fastening means through said vertical holder and moveable into said front portion of said groove for holding the saw blade in said groove.

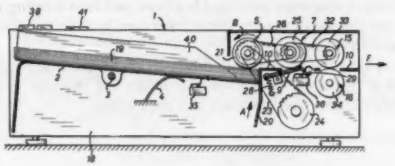
4,212,456

APPARATUS FOR AUTOMATICALLY FEEDING INDIVIDUAL SHEETS FROM A STACK THROUGH AN OFFICE MACHINE

Kurt Ruenzi, 8126 Zumikon, Switzerland

Continuation-in-part of Ser. No. 779,755, Mar. 21, 1977, Pat. No. 4,113,244, which is a continuation-in-part of Ser. No. 674,918, Apr. 8, 1976, Pat. No. 4,032,135. This application Sep. 7, 1978, Ser. No. 940,213
Claims priority, application Switzerland, Apr. 15, 1975, 4758/75
Int. Cl.[2] B65H *5/22*
U.S. Cl. 271—4 **3 Claims**

1. A sheet feeding and receiving apparatus for directing sheets of paper to and receiving said sheets of paper from platen means in a typewriting machine, comprising driven free wheeling separating roller means, a pivotally mounted supply stack support, means resiliently urging the leading edge of a top sheet on said supply stack support against said driven free wheeling separating roller means, a stop engaging the lower sheets on said stack support, a set of positively driven first transport roller means positioned downstream of said separating roller means in the transport direction of sheets on said stack, separating means (627) for separating the uppermost sheet from said stack to inhibit the passage of more than one sheet at a time through the apparatus, said apparatus further comprising first sheet guide means for deflecting the sheet supplied by the sheet separating roller means at a deflection angle in a downward direction, receiving stack support means arranged partially above said pivotally mounted supply stack support, second sheet guide means arranged above and down-



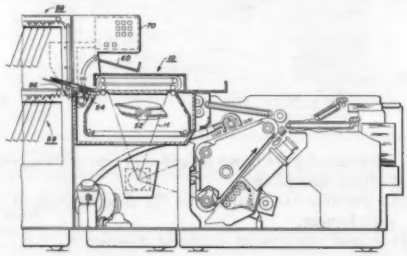
stream of said platen means for directing sheets upwardly from below said platen means to said receiving stack support means for storing sheets received from said platen, and driven second transport roller means positioned above said platen means to feed sheets from said platen means to said receiving stack support means, said apparatus further comprising photocell means operatively arranged between said free wheeling separating roller means and said platen means for detecting a spacing between successive sheets, and drive means operatively interconnecting said free wheeling separating roller means, and said first and second transport roller means for driving said roller means from a common source.

4,212,457

PRE/POST-COLLATION COPYING SYSTEM

Joachim Guenther, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 27, 1978, Ser. No. 890,097
Int. Cl.[2] B65H *31/24, 29/60*
U.S. Cl. 271—288 **8 Claims**



1. In a method of copying wherein a set of plural documents are circulated and copied a number of times corresponding to a selected plural number of copies, the improvement comprising:

switching between a selected one of the following different modes of operation;

a conventional post-collation mode of operation in which a number of identical copies corresponding to said selected number of copies are made from each document copied from the circulated document set, and these copies are forwarded to different individual bins of a sorting apparatus for collation in said sorting apparatus; and

a pre-collation mode of operation using the same sorting apparatus in which the documents are plurally circulated

by a number of times corresponding to the selected plural number of copies and copied once per circulation, in which mode of operation all the copies made from one said document circulation are placed in one said bin, but different said bins are used for different said document copying circulations so that each pre-collated copy set is individually placed in a different said bin of said sorting apparatus.

4. In a method of copying in which a pre-collation mode of copying is provided wherein a set of documents may be multiply recirculated for single copying onto copy sheets by a number of circulations corresponding to the number of desired copies to produce copy sheets in pre-collated order, and alternatively a post-collation mode of copying is provided wherein the documents may be multiply copied during a circulation onto multiple uncollated copy sheets and forwarded to a sorting apparatus having a number of individual sorting bins for sorting said uncollated copies into said bins; and in which the number of copies to be made by said copier may be selected by actuating a copy counter control, the improvement comprising:

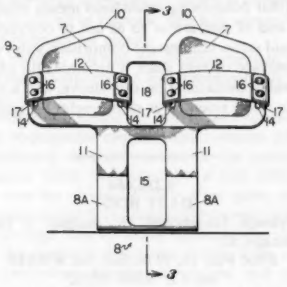
automatically switching between said pre-collation mode of copying and said post-collation mode of copying in response to said selection in said copy counter control of sa plural number of copies which exceeds a pre-set plural number corresponding to desired crossover copy count, so that when the selected number of copies is below said preset number the mode of document copying will be pre-collation, and when the selected number of copies is above said pre-set number the mode of copying will be post-collation.

4,212,458

FOOT HOLDING DEVICE FOR USE IN PERFORMING SIT-UP EXERCISES

George Bizilia, 226 Newbury St. #22, Boston, Mass. 02116

Filed May 8, 1978, Ser. No. 903,873
Int. Cl.[3] A63B *23/02*
U.S. Cl. 272—93 5 Claims



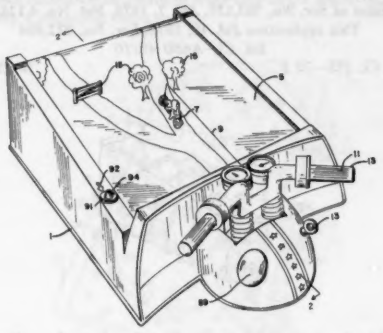
1. A device for use in performing sit-up exercies, said device including a head means for receiving feet of a user, a pair of laterally spaced supports carried by said head means, one support for supporting each foot of a user, each support including a support surface engageable by the ball area of the foot during an exercise program and a restraining strap holding each foot to the support surface, a base section in the form of a U and shaped and dimensioned to receive within it the bottom margin of a door, a connecting section positioned between said head means and said one side wall of said U-shaped base section, said connecting section inclined outwardly and upwardly thus placing said supports in position to receive the feet of a person who is seated or lying on the floor while the sit-up exercises are being performed, and said head section being inclined relative to said connecting section towards a plane inclusive of said one side wall.

4,212,459

RACING GAME

Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055

Filed Feb. 13, 1978, Ser. No. 877,485
Int. Cl.[2] A63F *9/14*
U.S. Cl. 273—1 E 23 Claims



7. A racing game comprising, in combination,

(a) a flexible endless belt,

(b) roller means positioned within and driving said belt and substantially coextensive therewith,

(c) a housing supporting said roller means,

(d) control means for variably controlling rotational space of said roller means,

(e) a vehicle, and

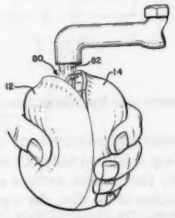
(f) means secured to said housing and said vehicle for directing said vehicle relative to said belt in two degrees of freedom, wherein said roller means includes a pair of spaced rollers, said rollers each including aligned grooves therein and further including an obstacle retaining means secured to the underside of said belt and aligned with said grooves, whereby said obstacle retaining means passes in said grooves when passing over said rollers.

4,212,460

HOLLOW WATER-FILLED GAME TOY

Donald J. Kraft, 512 Dartmouth Rd., Burbank, Calif. 91510

Filed Jul. 27, 1978, Ser. No. 928,382
Int. Cl.[2] A63B *37/12, 43/04*
U.S. Cl. 273—58 B 7 Claims



1. A hollow game toy comprising:

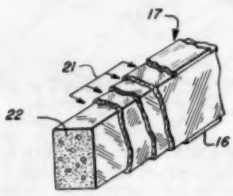
two resilient manually deformable complementary parts each having matching rim structures which are engaged to form a substantially hermetically sealed hollow body, said rim structure including at least one evacuation vent for purging fluid from the body interior during deformation of the body.

4,212,461

COMPOSITE HIGH STRENGTH TO WEIGHT STRUCTURE HAVING SHELL AND WEIGHT CONTROLLED CORE

Andrew M. Cecka, Thousand Oaks, and Paul G. Pawling, Oxnard, both of Calif., assignors to Fansteel Inc., N. Chicago, Ill.

Division of Ser. No. 703,137, Jul. 7, 1976, Pat. No. 4,124,670.
This application Jul. 10, 1978, Ser. No. 922,984
Int. Cl.[2] A63B 49/10
U.S. Cl. 273—73 F 16 Claims



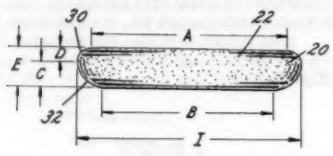
1. In a tennis racket frame having a handle and an ellipsoid head attached to one end of said handle and a grip element at the opposite end of said handle, an improved construction wherein said frame comprises a structural member of high strength to weight ratio comprising a core of an expanded porous resinous material integrally bonded to a shell comprising at least one layer of resin-coated unidirectionally oriented graphite fibers, said shell completely encasing said core at any cross section transverse to the length of said member and said core containing from about 25 to about 75 volume percent of chopped cork as a low density filler material and from zero to about 60 weight percent of a high density weight control material.

4,212,462

HYDROPLANING DISC

Danny W. Glovak, 2651 Holmes, Hamtramck, Mich. 48212, and Allan W. Buyze, 2701 South Fairview N-16, Santa Ana, Calif. 92704

Continuation-in-part of Ser. No. 739,837, Nov. 8, 1976, Pat. No. 4,151,997. This application Jun. 5, 1978, Ser. No. 912,285
Int. Cl.[2] A63B 65/10, 67/06
U.S. Cl. 273—424 9 Claims



1. An aerodynamic and hydromechanical hydroplaning disc comprising:

(a) a disc-like solid and unitary body of heavier-than-water material having a substantially flat top surface parallel to a substantially flat bottom surface enclosing the bulk of the center portion of the disc, the top surface being significantly larger than the bottom surface, and

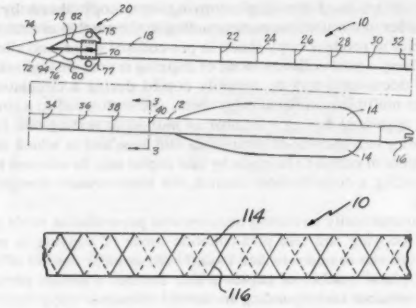
(b) a peripheral surface joining the top and bottom surfaces such that said peripheral surface is formed with a predetermined convex contour relative to the central axis perpendicular to the flat surfaces, said contour having a relatively larger radius of curvature for the bottom of the peripheral surface and a relatively smaller radius of curvature for the top of the peripheral surface, said curvatures blending tangentially at the periphery and at the respective top and bottom surfaces.

4,212,463

HUMANE BLEEDER ARROW

Robert J. Repinski, North Clarendon, and Enoch B. Pratt, Wells, both of Vt.

Filed Feb. 17, 1978, Ser. No. 878,717
Int. Cl.[2] F41B 5/02
U.S. Cl. 273—418 19 Claims



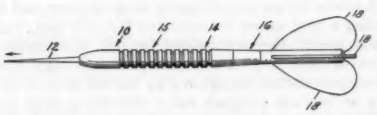
19. Apparatus, which comprises a hunting arrow including an elongated, hollow shaft having an inner surface, an outer surface and groove means formed thereon for facilitating the shearing of said shaft at the position thereof, said groove means comprising at least one groove spirally formed on said shaft, said groove extending about the circumference of said shaft a plurality of times and having a pitch approximately on the order of magnitude or less than the diameter of said shaft, wherein said inner surface is smooth and of a substantially constant diameter along the entire length of said shaft and wherein said arrow includes an open front end at the forward portion of said shaft of a diameter equal to said constant diameter, and further comprising arrowhead means attached to said open front end of said arrow so as not to obstruct fluid flow thereinto, said arrowhead means comprising a sleeve affixed to said outer surface of said shaft, a substantially planar broadhead removably mountable on said sleeve, and a substantially planar blade insert oriented at right angles on said sleeve and broadhead.

4,212,464

DART BODY

Milan S. Pelouch, Libertyville, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Feb. 15, 1978, Ser. No. 878,018
Int. Cl.[2] A63B 65/02
U.S. Cl. 273—416 7 Claims

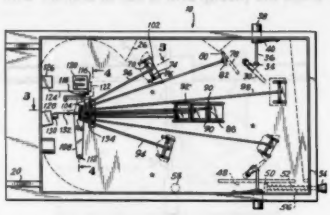


1. In a dart for hand throwing, a dart body to improve finger grip and release having a generally symmetrical gripping surface about a fore and aft axis, said surface having a plurality of each of grooves formed therein spaced along the axis of the body and having fore and aft spaced walls merging into the gripping surface, the forward wall having a relatively sharp merging angle with said surface and the aft wall having a relatively large and obtuse angle merging with said surface.

4,212,465
PINBALL GAME WITH PLURAL RE-PROJECTORS ACTUABLE BY SINGLE SOLENOID ACTED UPON BY SINGLE SWITCH

Avi Arad, New York, N.Y., assignor to Louis Marx & Co., Inc., Stamford, Conn.

Continuation of Ser. No. 779,300, Mar. 21, 1977, abandoned. This application Mar. 9, 1978, Ser. No. 885,132
Int. Cl.[2] A63D 3/02, 13/00
U.S. Cl. 273—121 A 13 Claims



12. A pinball game comprising:

a playing surface sloping downwardly from the rear to the front thereof;

at least one ball;

primary rear projector means for propelling a ball from near the front of the playing surface towards the rear thereof so as to permit the ball to roll down over the playing surface;

a plurality of rear re-projectors including a movable element and means supporting said element for movement between a front position and a rear position on said playing surface for impeding the ball as the ball rolls down over the play ing surface and for propelling said ball towards the rear of said playing surface when one of said re-projector means is contacted by said ball;

a solenoid;

a normally open energizing circuit for the solenoid;

a common normally open switch which is closed for completing the circuit in response to a ball contacting one of said rear re-projector means;

a common member adapted for displacement in a front-to-rear direction connected to and displaceable by said solenoid; and

motion transmission means for individually connecting each said rear re-projector means to said common member and for transferring forward motion of the associated rear re-projector when contacted by a ball rolling downwardly over the playing surface of the game, said motion transmission means being operatively connected with said switch through said common member whereby the motion of the motion transmission means from any of said rear re-projectors operates to operate said switch and actuate said solenoid;

said solenoid displacing said common member when the circuit is completed in response to a ball contacting one of said rear re-projectors thereby moving at least said rear re-projector means contacted by said ball towards the rear of said playing surface to said ball rearwardly.

4,212,466
GAME APPARATUS

John R. Wildman, North Riverside, and Burton C. Meyer, Downers Grove, both of Ill. Assignors to Maruin Glass & Associates, Chicago, Ill.

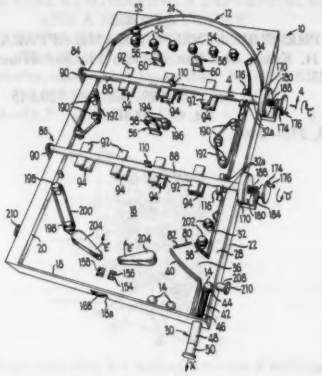
Filed Apr. 3, 1978, Ser. No. 892,646
Int. Cl.[3] A63F 7/24, 7/30
U.S. Cl. 273—121 R 17 Claims

1. A game apparatus comprising:

an enclosure for holding one or more balls including a sloping bottom wall and a peripheral side wall for containing said balls as they roll on said bottom wall toward a lower end portion thereof;

manually controlled means for launching said balls from said lower end portion toward an upper end portion;

target means in said enclosure adapted to be engaged by a ball rolling on said bottom wall, said target means including a releasable drive means;



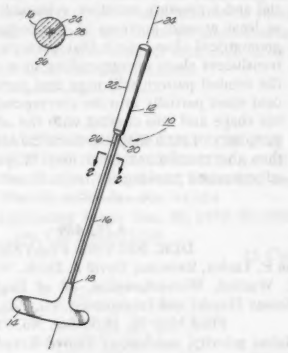
a release member activated by contact with said ball for actuating said drive means; and

a paddle mounted on a shaft for rotation therewith, said drive means including a biasing member on said shaft to rotate the same in response to activation thereof, to forcefully propel said ball in a given direction.

4,212,467
GOLF CLUB

Yukio Shiratori, 15432 Harvard Blvd., Gardena, Calif. 90247

Filed Jun. 15, 1978, Ser. No. 915,618
Int. Cl.[2] A63B 69/36, 53/10
U.S. Cl. 273—163 A 11 Claims



1. In a golf club, the improvement comprising, in combination:

a club head;

an elongated longitudinally extending substantially cylindrical shaft means having a first end coupled to said club head, and a second end;

a grip means coupled to said second end of said shaft means;

said shaft means having a predetermined longitudinal axis extending between said grip means and said club head;

said shaft means comprising:

a solid transparent portion intermediate said club head and said grip means, and said solid transparent portion having a peripheral surface; and

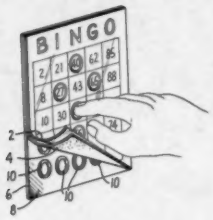
opaque indicia means on said transparent portion of said shaft means lying in a plane containing said predetermined longitudinal axis and said indicia means extending a predetermined longitudinal distance between said grip means and said club head.

4,212,468

PRESSURE SENSITIVE GAME APPARATUS

Philip H. Knott, One San Antonio Pl., San Francisco, Calif. 94133

Filed Jun. 30, 1978, Ser. No. 920,845
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—240 **14 Claims**



1. Game apparatus in which symbols are provided in a predetermined pattern and in which selected ones of those symbols are to be marked, comprising

a sheet of flexible, translucent material having an overlying said symbol pattern,

a substantially rigid and generally planar backing member attached to and behind said translucent sheet, said backing member having a fixed pattern of geometrical shapes extending below the surface of said backing member such that said translucent sheet may be depressed by a user partially into said pattern shapes, and said backing member having at least portions of the surface thereof which faces said translucent sheet coated with a pigmented material and a pressure sensitive, releasable adhesive material at least around portions of the periphery of each said geometrical shape, such that pressure applied upon the translucent sheet corresponding to a selected symbol of the symbol pattern will urge that portion of the translucent sheet partially into the corresponding backing member shape and into contact with the adhesive around the periphery of such shape to mark the selected symbol, and then the translucent sheet may be pulled free of such adhesion and marking for reuse in another game.

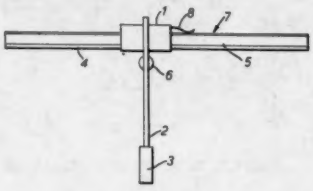
4,212,469

DISC RECORD PLAYERS

Brian P. Taylor, Swindon; David J. Davis, Wroughton, and Roy N. Wasdell, Wolverhampton, all of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed May 30, 1978, Ser. No. 910,859
Claims priority, application United Kingdom, Jun. 3, 1977, 23708/77
Int. Cl.[2] G11B 3/38
U.S. Cl. 274—23 A **6 Claims**

1. A disc record player comprising a pickup arm, electrical position responsive means for providing an electrical signal that is dependent upon the position of the pickup arm, electrical reference means for affording one or more reference signals corresponding to one or more required positions of the pickup arm, comparator means for comparing the electrical signal from the electrical position responsive means with a selected reference signal from the electrical reference means and for generating a command signal which is effective to cause the pickup arm to move to a position corresponding to the said required position, a motor driven carriage means for carrying said pickup arm which is movable for maintaining the pickup arm in a fixed relationship to a record on the record player, a first servo-controlled means for energising the motor driven carriage means when the pickup arm is in contact with a record being played, and second servo-controlled means responsive to the electrical signal that is dependent upon the position of the pickup arm and to said reference signal for moving the pickup arm to the position corresponding to said required position when the pickup arm is not in contact with a record



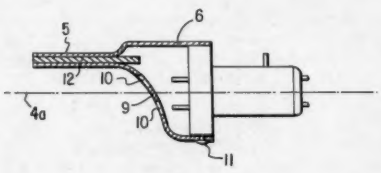
being played, the first servo-controlled means comprising feedback control means for controllling the velocity and/or acceleration of the pickup arm, said feedback control means being interconnected between said electrical position responsive means and said motor driven carriage means for effecting velocity and/or acceleration feedback control of the pickup arm, said feedback control means including first and second differentiator means for providing velocity and acceleration feedback control of the pickup arm, the first differentiator means affording a velocity control signal and the second differentiator means affording an acceleration control signal.

4,212,470

HEAD SHELL FOR PICK-UP ARMS AND METHOD OF MAKING SAME

Mitsuyoshi Morinaga, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1978, Ser. No. 941,767
Int. Cl.[2] G11B 3/10
U.S. Cl. 274—37 **5 Claims**



1. A head shell for pick-up arms comprising

a flat part for mounting a phonograph cartridge formed by machine-pressing one end of a tubular member so that an opening remains at the other end and

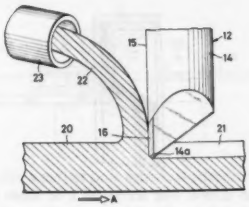
an electrical connector mounted at the opening adapted for connection to a pick-up arm.

4,212,471

DEVICE FOR CUTTING A SOUND GROOVE ON A DISC RECORDING MEDIUM

Yoshiro Nishiwaki, and Tetsuro Izumi, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 28, 1979, Ser. No. 25,449
Claims priority, application Japan, Mar. 31, 1978, 53-36550
Int. Cl.[2] G11B 3/44
U.S. Cl. 274—38 8 Claims



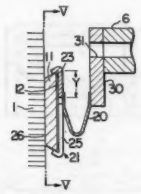
1. A device for cutting sound grooves in a disc recording medium, said device having a cutting stylus for recording sound by cutting on the disc recording medium, said cutting stylus comprising a cutting stylus structure of diamond having a cutting part for cutting the disc recording medium while producing a cut chip therefrom, at least a surface of the cutting stylus structure contacting the chip having been rendered electroconductive to a specific depth by an ion-implantation process.

4,212,472

SEAL ASSEMBLY FOR ROTARY HEAT-EXCHANGER

Toru Mizuno, Kariya, and Masao Kitano, Numazu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 30, 1978, Ser. No. 911,195
Int. Cl.[2] F16J 15/54
U.S. Cl. 277—12 12 Claims



1. A seal assembly for a rotary heat-exchanger of a gas turbine, said rotary heat-exchanger including a housing having therethrough a low pressure gas passage and a high pressure air passage, and a regenerative rotor rotatable within said housing across said passages to effect the heat exchange between gas flowing through said low pressure gas passage and air flowing through said high pressure air passage, said seal assembly being positioned between said housing and said regenerative rotor to seal between said passages and comprising:

a sliding pad of a solid lubricant having an inner and outer peripheries and opposite surfaces, one of said opposite surfaces being adapted to be in slidable contact with said regenerative rotor to support the same;

a backing of a thin sheet metal in flat contact with the other surface of said sliding pad and having an inner and outer peripheral edges respectively swaged over the inner and outer peripheral edges of said sliding pad to hold the same; said thin sheet metal backing having formed therein with a plurality of spaced slits extending from the inner periphery toward the outer periphery of said thin sheet metal backing; and

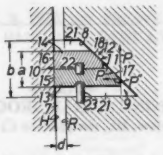
a resilient seal interposed between said sliding pad and said thin sheet metal backing.

4,212,473

MULTIPLE SEAL RING HAVING A TAPERED SURFACE, AND A SEALING DEVICE

Yoshio Arai, 1400 Kamihongo, Matsudo-shi, Chiba-ken, Japan

Filed Mar. 2, 1979, Ser. No. 16,736
Claims priority, application Japan, Jun. 21, 1978, 53-74963
Int. Cl.[3] F16J 15/34
U.S. Cl. 277—81 P 6 Claims



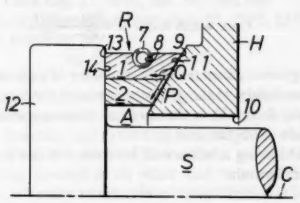
1. A multiple seal ring for sealing between a stationary flat surface and a rotary flat surface and adapted to be received in an annular groove formed in the rotary surface, said seal ring comprising a plurality of annular seal elements of different diameter each having a flat sealing face formed at one end for making sealing contact with said stationary flat surface and a conical sealing face formed at the other end for making sealing contact with a conical bottom surface of said annular groove, said conical sealing face diverging in a radially outward direction toward said flat sealing face, each of said seal elements being cut in a radial direction so as to afford itself a radially outwardly expanding force, said seal elements being closely fitted one over the other in concentric relation with each other with the cut portions of said seal elements being circumferentially displaced from each other, whereby said seal elements are slidable under the action of their own expanding force along said conical bottom surface of said groove to thereby urge the mutually adjacent inner and outer peripheral surfaces of said seal elements into intimate contact with each other for sealing said cut portions of said seal elements.

4,212,474

SEAL RING HAVING TAPERED SURFACE AND SEALING DEVICE INCORPORATING THE SAME

Yoshio Arai, 1400, Kamihongo, Matsudo-shi, Chiba-ken, Japan

Filed May 31, 1979, Ser. No. 44,014
Claims priority, application Japan, Jun. 30, 1978, 53-79380
Int. Cl.[2] F16J 15/34
U.S. Cl. 277—83 11 Claims



1. A seal ring with at least one tapered surface for use in sealing a space between a first and a second members, the first and the second members having opposing annular surfaces to be sealed defining therebetween an outwardly diverging annu-

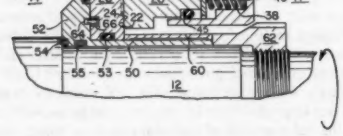
lar gap, said seal ring comprising: an inner ring having an inner and an outer peripheral surfaces and both sealing end surfaces adapted to make close contact with said annular surfaces of said first and second members, said inner ring being divided in the circumferential direction into two sections; an outer ring having an inner peripheral surface fitted over said outer peripheral surface of said inner ring, an outer peripheral surface, and both sealing end surfaces adapted to make close contact with said annular surfaces of said first and second members, said outer ring being divided in the circumferential direction into two sections at points which are offset in the circumferential direction from the points at which said inner ring is divided into two sections; and a tightening resilient member surrounding said outer peripheral surface of said outer ring and adapted to resiliently press said outer and inner rings radially inwardly.

4,212,475

SELF ALIGNING SPIRAL GROOVE FACE SEAL

Josef Sedy, Glenview, Ill., assignor to Crane Packing Co., Morton Grove, Ill.

Filed Jan. 15, 1979, Ser. No. 3,251
Int. Cl.³ F16J *15/34, 15/42*
U.S. Cl. 277—96.1 **6 Claims**



1. In a self aligning spiral groove gas seal having a stationary sealing ring and a primary sealing ring with opposed radially extending faces, one of said rings being sealingly affixed to a housing and the other affixed to the shaft, the improvement comprising:

spiral grooves extending inwardly from one circumference of the face of one of said rings, said grooves having a depth of between approximately 0.0001 and 0.0003 inches, said grooves extending across the face of said ring to provide a dam width ratio of between approximately 0.5 and 0.8 according to one of the following formula

$$\text{Dam Width Ratio} = \frac{GD - ID}{OD - ID}$$

$$\text{Dam Width Ratio} = \frac{OD - GD}{OD - ID}$$

where groove diameter is the diameter of a circle defined by the boundary of the grooved area and the ungrooved area in said face, ID is the internal diameter and OD is the outside diameter; and

said seal having a balance of between 0.8 and 0.9 according to the formula

$$\text{Balance} = \frac{OD^2 - BD^2}{OD^2 - ID^2}$$

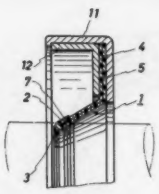
where OD is the outside diameter of the sealing interface, ID is the inside diameter and BD is the balance diameter.

4,212,476

HYDRODYNAMIC SEAL

Hideo Kawabata, Fujisawa, and Tatsuaki Yukimasa, Chigasaki, both of Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,511
Claims priority, application Japan, Jul. 21, 1978, 53-100343[U]
Int. Cl.² F16J *15/32*
U.S. Cl. 277—134 **4 Claims**



1. A hydrodynamic seal comprising a sealing member of a fluorine resin including a sealing lip portion having a conical shape and a fixing portion extending from the sealing lip portion in the radial direction, a gripping support member for gripping and supporting said fixing portion of said sealing member and a coil spring member wound helically in the conical shape on said sealing lip portion of said sealing member,

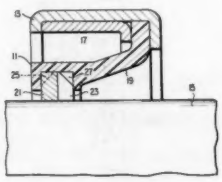
wherein a spiral projection is formed on the peripheral face of said sealing lip portion by said spring member.

4,212,477

CIRCUMFERENTIAL SHAFT SEAL

Lawrence P. Ludwig, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1976, Ser. No. 672,219
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—193 **9 Claims**



1. In a circumferential seal for sealing a shaft rotatably journaled in a housing, the improvement comprising:

an elastomeric band spaced from the shaft and adapted to encircle the shaft;

a pair of sealing rings in substantial juxtaposition immovably fitted in the space between the elastomeric band and the shaft, each of said sealing rings having an inner diameter dimensioned so that the sealing rings slidably and sealingly engage the shaft;

each of said rings consisting essentially of a plurality of segments in simultaneous engagement with both said elastomric band and said shaft, the junctions between segments in one of said sealings rings being displaced relative to the junctions between segments in the other of said sealing rings, each of said segments having an outer peripheral surface in engagement with said elastomeric band and an inner peripheral surface in engagement with

said shaft so that said elastomeric band maintains said sealing ring in engagement with said shaft; and

means for sealably engaging the elastomeric band with the housing.

4,212,478

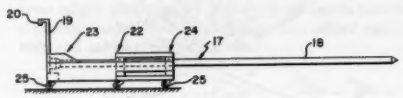
CARPET POLE CADDIE

Donald L. McGrath, Jr., 19 Ramsgate Dr., Palos Park, Ill. 60464

Filed Oct. 31, 1978, Ser. No. 956,393

Int. Cl.[2] B62B *11/00*

U.S. Cl. 280—79.1 A **4 Claims**



1. A caddie for a carpet pole which is adapted to be engaged by a forward mask of a lift-truck and which has a mounting plate and has a contiguous rod portion extending away from the mounting plate, said caddie comprising:

a framework having

a forward portion, shaped to receive the said mounting plate; and

a rearward portion having a rod-receiving channel for the said rod portion of the said carpet pole;

said forward portion supporting the said mounting plate at a level above a level which the mounting plate assumes when engaged with the said forward mask in the bottom-most position of the said forward mask.

4,212,479

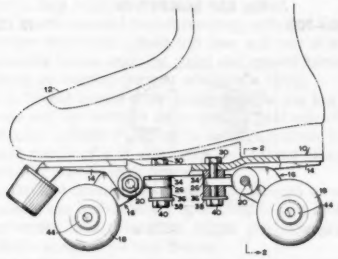
ROLLER SKATE

Koichi Yoshimoto, 3-15-310, Takaodori, 4-chome, Nata-ku, Kobe-shi, Hyogo-ken, Japan

Filed Sep. 18, 1978, Ser. No. 943,221

Int. Cl.[2] A63C *17/02*

U.S. Cl. 280—11.28 **1 Claim**



1. A roller skate comprising:

a base plate to be mounted on the bottom of a shoe;

front and rear roller-mounting members that are rotatably mounted on the lower surface of said base plate via shafts which are nearly at right angles to the running direction of the roller skate and which are nearly in parallel with a skating surface, said roller-mounting members having a first portion disposed in parallel with the lower surface of said base plate, and a second portion extending aslantly from one end of said first portion toward the surface of the skating surface;

a shock-absorbing mechanism having a connection rod which penetrates through said base plate and said first portion to connect said first portion of said roller-mounting portion to said base plate, and elastic members which are placed between said base plate and said first portion, and between said first portion and a tip of said connection rod;

a pair of axles attached to a second portion of said roller-mounting member and extending in the opposite directions and toward the skating surface;

hemispherical rollers supported by each of said axles; and

said base plate having a pair of ridges on the lower surface thereof, and a pair of shafts supported between said ridges, each of said shafts supporting said roller-mounting members.

4,212,480

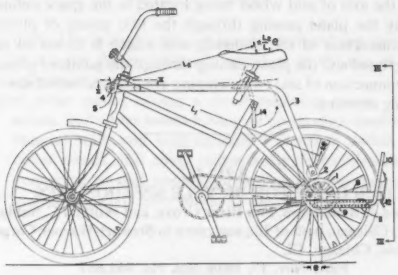
CONVERTIBLE EXERCISE BICYCLE

Stanley J. Mikina, 4782 Coquina Key Dr., St. Petersburg, Fla. 33705, and John A. Mikina, 16975 Fitzgerald St., Livonia, Mich. 48154

Filed Nov. 3, 1978, Ser. No. 964,574

Int. Cl.[2] B62M *1/20*; B62H *1/04*

U.S. Cl. 280—226 R **4 Claims**



1. In a convertible exercise bicycle comprising front and rear wheels, a seat, a pedal and driving mechanism for oscillating said seat substantially vertically, a stowable and expandable stand comprising a substantially U-shaped member surrounding said rear wheel, a spring clip for normally holding said stand horizontally in the raised position, and a pair of foldable bars attached to the sides of said U-shaped member and normally held upwardly closely adjacent said rear wheel, and means for spreading said bars outwardly and locking them when said stand is moved to the ground engaging position so as to lift the rear wheel from the ground to enable free rotation thereof, said bars thereby providing safe lateral support to said stand when the stationary bicycle is used as a jogging exercise machine.

4,212,481

SUSPENSION SYSTEM FOR VEHICLE WHEELS

Valentino Ribi, Genoa, Italy, assignor to Diafil International S.A., Panama, Panama

Filed Sep. 13, 1978, Ser. No. 942,086

Claims priority, application Italy, Sep. 21, 1977, 12769 A/77; Feb. 7, 1978, 12463 A/78

Int. Cl.[2] B62K *21/02*

U.S. Cl. 280—276 **10 Claims**

1. A suspension system for a vehicle road wheel comprising

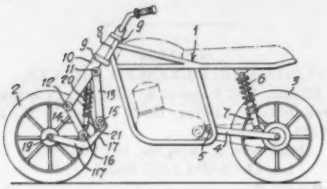
(a) two swinging arms each pivoted at one end to a suspended structure and extending at an angle to one another in a longitudinal plane of the vehicle, each of said two arms being pivoted at its other end to a wheel-carrying element, whereby an articulated quadrilateral is formed by said suspended structure, said two arms and said wheel-carrying element;

(b) resilient means acting on the said articulated quadrilateral;

(c) a prolongation of said wheel-carrying element extending

outside the area of the angle formed by said two swinging arms and beyond the point of pivotal connection to one of the said swinging arms which point is nearer to the ground, said prolongation extending towards the plane passing through the points of pivotal connection of said two swinging arms to said suspended structure;

(d) said wheel being mounted on a wheel mounting provided on said prolongation of said wheel-carrying element;



(e) the axis of said wheel being located in the space defined by the plane passing through the two points of pivotal connection of the swinging arm which is closer to the ground and the plane passing through the points of pivotal connection of said two swinging arms to said wheel-carrying element.

4,212,482

HUB DRIVE FOR BICYCLE SPEEDOMETER

Howard J. Rasmussen, Fox River Grove, and William C. Sublusky, Chicago, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Nov. 17, 1978, Ser. No. 961,657
Int. Cl.[2] G01C *22/00*
U.S. Cl. 280—289 D **10 Claims**

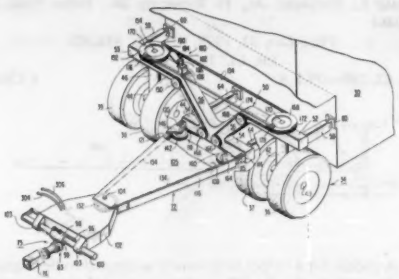
1. A drive assembly for a bicycle speedometer for transmitting rotary motion from the front wheel of the bicycle to a remotely mounted speedometer, comprising; a frame member adapted to be mounted on the bicycle frame adjacent the front wheel hub, a first gear rotatably mounted on said frame about an axis parallel to the front wheel hub, drive means carried by the first gear to transmit rotary motion from the front wheel to the first gear, a second gear rotatably mounted on said frame for rotation about an axis perpendicular to the axis of rotation of the first gear and engageable with the first gear to be driven thereby, a third gear mounted for rotation on said frame about an axis parallel to the second gear and engaging the second gear to be driven thereby, said second and third gears having interengaging surfaces for maintaining the axial position of the third gear along the axis thereof, said third gear being freely movable axially in at least one direction except for the support of said second gear, and coupling means driven by the third gear adapted to be connected to a flexible drive cable that drives the speedometer.

4,212,483

STEERING ASSEMBLY FOR TOWED VEHICLES

Durrell U. Howard, 306 Krameria Dr., San Antonio, Tex. 87200

Continuation-in-part of Ser. No. 876,995, Feb. 13, 1978, abandoned. This application Dec. 13, 1978, Ser. No. 968,884
Int. Cl.[2] B62D *13/04*
U.S. Cl. 280—444 **42 Claims**



35. Apparatus for coupling a towing vehicle to a towed vehicle having a rear axle and a forward axle supporting at least one steerable wheel, said apparatus comprising:

a coupling means providing for changes in the angle formed between the longitudinal axes of the towing vehicle and the towed vehicle and for changes in lateral offset between said longitudinal axes,

a first sensing means providing a first signal responsive to changes in said angle,

a second sensing means providing a second signal responsive to changes in said offset, and,

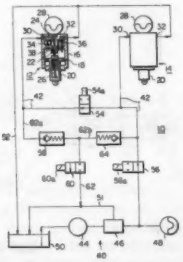
actuator means responsive jointly to said first and second signals for steering said steerable wheel.

4,212,484

HYDROPNEUMATIC SUSPENSION SYSTEM

Masayuki Fujii, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 3, 1978, Ser. No. 957,520
Claims priority, application Japan, Nov. 7, 1977, 52/132435
Int. Cl.[2] B60G *17/04*
U.S. Cl. 280—707 **15 Claims**



1. In a hydropneumatic suspension system having a source of fluid under pressure, a fluid reservoir and a plurality of self-levelling suspension units which are mounted between wheel supporting means and a body of a wheeled vehicle and equipped with self-levelling valve means operative to communicate interiors of the suspension units through inlets and outlets thereof with the source and the reservoir for maintaining the level of the vehicle body above the ground substantially constant, the improvement comprising:

electrically controlled normally open valve means connected between the source and the inlets of the self-levell-

ing suspension units and operative to obstruct communication therebetween when actuated to close;

electrically controlled normally closed valve means connected between the reservoir and inlets of the self-levelling suspension units and operative to establish communication therebetween when actuated to open; and

relief valve means connected in series with said normally closed valve means so as to maintain the fluid pressure in the interior of each of the self-levelling suspension units above a predetermined value when said normally closed valve means are actuated to open;

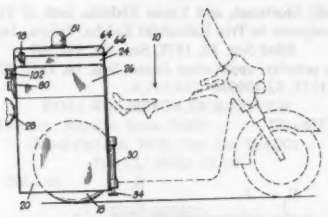
in which said normally open and normally closed valve means are adapted to be actuated synchronously with one another such that, when said valve means are actuated, the level of the vehicle body above the ground is lowered to a predetermined low level effective to afford entry/exit ease and loading/unloading ease.

4,212,485

MEDICAL SERVICE EQUIPMENT FOR MOTORCYCLES

Keneth D. Kramb, 3506 East Shore Dr., Kalamazoo, Mich. 49002

Filed Jan. 22, 1979, Ser. No. 5,316
Int. Cl.² B62J *5/16, 7/04*
U.S. Cl. 280—766 **6 Claims**



1. A case assembly for emergency medical and rescue materials attachable over the rear wheel of a motorcycle comprising:

a first support panel arranged to be secured to support members of a cycle in transversely extending and laterally projecting relation over said rear wheel,

other panels secured to and coacting with said first panel to define therewith a main top case and two side cases depending below said first panel and spaced laterally therealong to overlap the rear wheel of a cycle,

doors hinged to said other panels to close the top of the top case and the laterally outer sides of said side cases,

hydraulic cylinders secured in upright relation to the front side panels of said side cases and having extensible supporting feet on their lower ends,

a pump and driving motor therefor secured to one of said panels and hydraulically connected to said cylinders,

rearwardly facing standard signal and emergency signal lights mounted on said panels,

and a multi-conductor terminal block on a forwardly facing panel of said cases and having exposed switch elements on its forward side connected to control the energization of said rearwardly facing signal lights and said motor from the battery of said cycle.

4,212,486

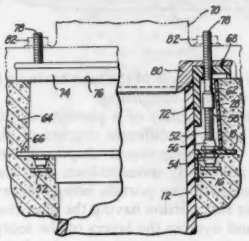
WATER CLOSET PROTECTOR STABILIZER

Duane D. Logsdon, Fullerton, Calif., assignor to The Logsdon Foundation, Stanton, Calif.

Filed May 19, 1978, Ser. No. 907,509
Int. Cl.² F16L *55/00*
U.S. Cl. 285—4 **10 Claims**

1. A water closet protector stabilizer of the type used to secure a plastic soil pipe within the body of a concrete slab and to provide a cavity between the concrete slab and the pipe in which a portion of a closet mounting ring can be inserted and wherein said closet mounting ring is of the type having a tube portion fitting around said pipe and a flange portion attached to the top of said tube portion onto which a water closet abuts with and in conjunction with a gasket seals the flange portion the improvement which comprises:

collar means, said collar means having a cylindrical section



thereof for mating with and attaching to said soil pipe and an annular flnage integrally attached to the top of said cylindrical section,

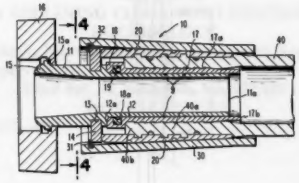
said collar means having a closet retaining means, cover means, said cover means having an upstanding continuous integral wall, said wall defining a chamber within said cover means, said cover means having a top detachably connected to said upstanding wall, attaching means for connecting said cover means to said collar means.

4,212,487

HOSE COUPLING

Walter L. Jones, Arnold, and Willard G. Triest, Annapolis, both of Md., assignors to Hydrasearch Co. Inc., Annapolis, Md.

Filed Nov. 17, 1978, Ser. No. 961,627
Int. Cl.² F16L *33/16*
U.S. Cl. 285—95 **12 Claims**



1. A hose coupling comprising a nipple dimensioned for insertion into a hose, a stem circumscribing and mounted for sliding movement on said nipple, means on said stem for gripping the interior of a hose;

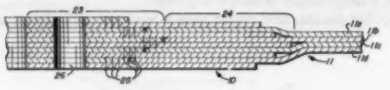
a plurality of longitudinally extending wedge shaped segments radially spaced from said stem and for embracing a length of hose between said stem and wedge shaped segments;

a compression sleeve circumscribing said wedge shaped segments, said sleeve having an interior for engaging and embracing said wedge shaped segments, and means to inhibit axial movement of said compression sleeve relative to said nipple when said coupling is connected to said hose and subject to fluid pressure interiorly thereof for permitting limited axial movement of both said stem and said wedge segments with said hose and relative to said nipple and said sleeve to increase the grip of said wedge segments and said stem against said hose.

4,212,488
FITTING FOR FLEXIBLE WALLED RECEPTACLE

Richard L. Cook, 444 Lake Mary Rd., Flagstaff, Ariz. 86001

Filed Jun. 21, 1978, Ser. No. 917,465
Int. Cl.[2] F16L *41/00*
U.S. Cl. 285—200 19 Claims



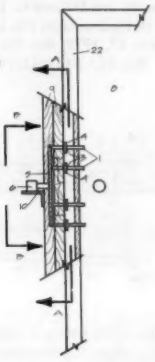
1. A fitting for a receptacle of the type having a flexible wall with a plurality of layers comprising:

(a) a unit composed solely of a plurality of plies of sheet material of relatively different degrees of elasticity, the plies being of predetermined shape, of varying sizes, stacked and adhesively united to form inner and outer ring portions, the inner ring portion being substantially rigid and the outer ring portion having the plies thereof spaced to receive and overlap the layers of the receptacle wall, the plies forming the outer ring portion being mechanically connected to certain plies of the inner ring portion, the stacked plies forming the inner ring portion having registering openings for the reception of fastening elements.

4,212,489
ELECTRICALLY OPERATED MULTIPLE SECURITY BOLT DOOR LOCKING DEVICE

Eugene T. Snyder, 5735 W. Florida Ave., Lakewood, Colo. 80206

Filed Jul. 13, 1978, Ser. No. 918,339
Int. Cl.[2] E05C *1/06*
U.S. Cl. 292—33 5 Claims



1. A locking system for a hinged door, said door adapted to open and close to a position flush with a face of a door frame, said door connected along one vertical side thereof to the door frame, said door frame and connected door disposed within a wall, said locking system comprising, in combination:

stud means of substantially the same thickness as said wall located immediately adjacent to said door frame across the door frame the hinge connection between the door frame and door;

a plurality of generally planar apertured reinforcements rigidly attached in generally vertical alignment to said stud means, the aperture of each of said reinforcements protruding away from said door when the door is in the closed position;

an equal plurality of bolts integrally connected, parallely aligned and reciprocatively received by the apertures of said reinforcement, said bolts moving in a movement path between an extended position crossing the interface between the door frame and the closed door, said bolts abutting against the closed door, and a withdrawn position wherein said bolts are not extended across the interface between the door frame and the closed door;

at least one generally planar bolt retainer mounted on the face of said door frame across the door frame from the hinge connection with the door, each retainer being biased to extend into the movement path of said bolts thereby preventing the movement of said bolts to the extended position, each bolt retainer further having a flange disposed at one end thereof adapted to engage said door upon closing of said door and to further move each bolt retainer out of the movement path of said bolts thereby permitting the plurality of bolts to extend;

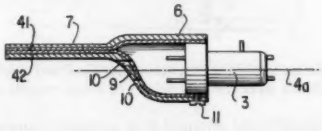
means for selectively withdrawing in concert said bolts from their extended position to their withdrawn position, mounted to said stud means; and

means for biasing said bolts toward their extended position said biasing means operatively connected between said stud means and said bolts.

4,212,490
HEAD SHELL FOR PICK-UP ARMS AND METHOD OF MAKING SAME

Mitsuyoshi Morinaga, and Yasuo Kishida, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1978, Ser. No. 941,769
Claims priority, application Japan, Sep. 14, 1977, 52-109945; Sep. 14, 1977, 52-109946
Int. Cl.[2] G11B *3/10*
U.S. Cl. 274—37 5 Claims



1. A head shell for pick-up arms comprising

a flat part for mounting a phonograph cartridge formed by machine-pressing one end of a tubular member comprising a material selected from the group consisting of boron fiber, glass fiber, fiber reinforced plastic and carbon fiber so that an opening remains at the other end; and

an electrical connector mounted at the opening of the remaining tubular part adapted for connection to a pick-up arm.

4,212,491
RESILIENT FLANGED WHEEL

Robert L. Pinckney, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 2, 1978, Ser. No. 948,004
Int. Cl.[2] B60B *17/00*
U.S. Cl. 295—11 5 Claims

1. A wheel comprising:

a center hub;

a web integral with and disposed around said hub;

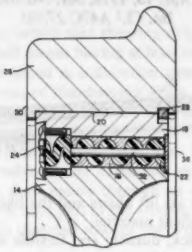
a rim disposed around said web;

a tire connected to and disposed around said rim;

connection means for attaching said rim to said web, said means comprising an elastomer adhesively bonded to mating helical threads on the outer circumference of said web and the inner circumference of said rim; and

locking means connected to said rim and said web by an

elastomeric material and passing through said connection means, whereby said rim is prevented from shifting its



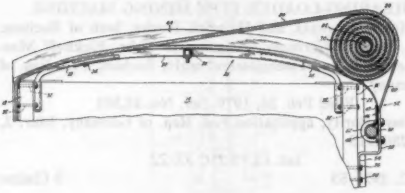
position relative to said web in the event that said elastomer disbonds.

4,212,492

ROLL-UP TRUCK BED COVER

Walter Johnsen, Aurelia, Iowa 51005

Filed Oct. 26, 1978, Ser. No. 954,901
Int. Cl.[2] B60J *11/00*
U.S. Cl. 296—98 **9 Claims**



1. A flexible cover unit for an open top cargo bed on a truck and the like having spaced upright first and second sidewalls, a front wall and a back wall, said cover unit comprising:

a flexible cover adapted to overlie the open top of the cargo bed and said first and second sidewalls,

means securing one edge of said cover along the upper edge of said first sidewall,

an elongated flexible member secured at one end to the opposite edge of said cover at a point generally centrally between said front and back walls,

means operatively associated with said opposite edge of said cover for rolling said edge into a cylindrical roll across the top of the cargo bed from said second sidewall to said first sidewall,

the rolling of said cover acting to roll said elongated flexible member in part into the convolutions of said cover whereby a selected length of said elongated flexible member remains extended from the rolled up cover, and

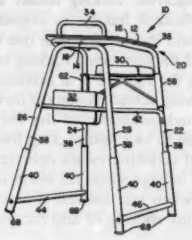
the manual movement of said extended length of said elongated flexible member toward said second sidewall acting independently and directly on said convolutions to unroll said cover back across the cargo bed from said first sidewall to said second sidewall.

4,212,493

APPARATUS FOR ASSISTING SEMI-INVALID PERSON TO WALK

Eugenia A. Ledesky, 323 W. 14th St., New York, N.Y. 10014

Filed Sep. 25, 1978, Ser. No. 945,638
Int. Cl.[2] A47D *13/04*
U.S. Cl. 297—6 **16 Claims**



1. An apparatus for assisting a semi-invalid person to walk comprising:

(a) a generally U-shaped top rail delineating the front and two sides of the apparatus, the rear of the apparatus being open,

(b) four legs depending from the top rail in the general form of a cubic trapezoid delineating the four upright edges of the apparatus, the front two legs being formed of a unitary U-shaped member, the top rail and the unitary member being co-joined along the front edge of the apparatus,

(c) a seat, pivotally mounted to a first of the rear two legs and having lock means lockingly engageable with a second of the rear two legs for closing the rear of the apparatus, and

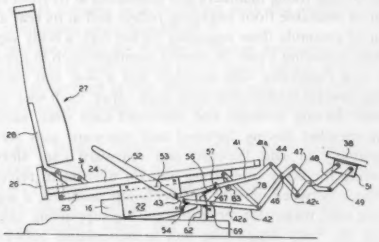
(d) a knee pad mounted between the front two legs and situated with respect to the seat so as to permit the user of the apparatus to assume any stance between a standing and a semi-sitting position.

4,212,494

ROCKER RECLINING CHAIR WITH MULTI-POSITION ROCKER LOCK

Upton Dabney, Morristown, Tenn., assignor to Kroehler Mfg. Co., Naperville, Ill.

Filed Jul. 24, 1978, Ser. No. 927,408
Int. Cl.[2] A47C *1/02*
U.S. Cl. 297—69 **5 Claims**



1. In a combination rocking and reclining chair including a base, a rocking frame mounted on the base for rocking movement, a seat frame, seat frame linkage means mounting said seat frame for forward and upward movement relative to said rocking frame, a backrest, backrest linkage means pivotally mounting said backrest on said seat frame for movement between a generally upright position and a reclining position, the movement of said backrest to reclining position also effecting

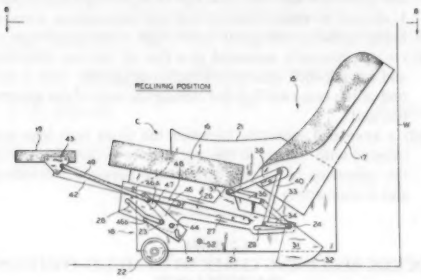
conjoint movement of said seat frame forwardly and upwardly, a footrest movable between an extended position projected forwardly from the front of the chair and a retracted position, footrest linkage means mounting said footrest relative to said seat frame, manually operated means for actuating said footrest linkage means for selectively moving said footrest between extended and retracted positions independently of the movement of the backrest, locking means actuated by the movement of said footrest linkage to extended position for selectively locking said rocking frame in one of a plurality of angular positions and for preventing rocking movement of the rocking frame when the footrest is in extended position, said locking means also being actuable upon the forward movement of said seat frame independently of the movement of said footrest linkage means to lock said rocking frame in a selected angular position, and actuating means operated by the movement of said footrest linkage means for automatically releasing said locking means when said footrest is moved to retracted position so as to permit rocking of said rocking frame.

4,212,495

RECLINING CHAIR

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck & Co., Chicago, Ill.

Filed Jan. 26, 1979, Ser. No. 6,588
Int. Cl.[2] A47C *1/02*
U.S. Cl. 297—84 **11 Claims**



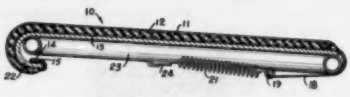
1. A reclining chair adapted to be positioned in close adjacency to a room wall when in upright sitting position and automatically movable away from the wall upon the assumption of a reclined position to avoid physical contact with the same wall, the reclining chair comprising a base frame having a pair of side frame members and supported at its front end on a pair of rotatable floor engaging rollers and at its rear end on a pair of rotatable floor engaging rocker feet, a body supporting unit including a pair of control members each in juxtaposition to a respective side member and a seat and back rest having pivotal relationship with each other, each said control member having forward and rearward cam slots, each side frame member having forward and rearward pins received respectively in said forward and rearward cam slots and mounting the body supporting unit for movement relative to the frame between upright and reclining positions, a leg supporting unit, means for mounting the leg supporting unit relative to the body supporting unit in movements between retracted and extended positions as the body supporting unit is concomitantly moved, and means operatively connecting the body supporting unit and the rocker feet for rocking the rocker feet in one direction to move the frame forwardly away from the wall as transition is made from upright sitting position toward a position of reclination and for rocking the rocker feet in a reverse direction to move the frame rearwardly toward the wall as transition is made from a reclined position toward upright position.

4,212,496

CUSHION FOR SKI LIFT CHAIR

Arthur J. Kirkham, Jr., 9381 Peacock Dr., Sandy, Utah 84070

Filed Apr. 13, 1978, Ser. No. 895,862
Int. Cl.[2] A47C *27/00*
U.S. Cl. 297—226 **1 Claim**



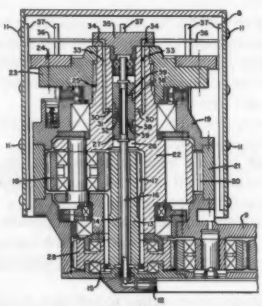
1. A cushion for ski lift chairs and the like comprising
a flat pad of resilient material;
a covering of slick, durable and flexible sheet material entirely covering said pad;
a reversible pocket formed from said sheet material at one end of the pad said pocket being adapted to fit over the front edge of a seat;
a flat bar fully encased in the covering of the pocket and extending substantially the full width of the cushion to hold the pocket flat against the seat edge with a flat surface of the bar holding the covering flat against a flat surface of the seat edge;
a flap formed from the sheet material extending from the opposite end of the pad said flap having a width less than that of the one end of the pad, the edges of said pad being angled to the flap;
a rod inserted into the flat at the end thereof opposite to the pad and extending across the full width of the flap; and
spring means connected to and projecting from the rod to be connected to the undersurface of the seat whereby a substantially uniform pull is applied to the flap and the pad.

4,212,497

LIQUID DISCHARGE APPARATUS FOR A SHEARING-LOADER TYPE MINING MACHINE

Karl-Heinz Borowski, and Heinrich Honke, both of Bochum, Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,501
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808915
Int. Cl.[2] E21C *35/22*
U.S. Cl. 299—53 **9 Claims**



1. In a mining machine having drive means for propelling the mining machine along a course of travel of a mine face, the mining machine including a machinery unit, a pivotal support arm carrying a rotatably-driven shearing drum, the combination therewith of apparatus to discharge liquid from only an arcuate face segment of said shearing drum while directed toward a mine face, said apparatus including;

liquid discharge nozzle members circumferentially distributed about the periphery of said shearing drum,

conduit members extending radially in said shearing drum to communicate with the circumferentially-spaced nozzle members,

shaft means about which said shearing drum independently rotates, said shaft means having at least one internal opening to conduct liquid in a direction generally parallel to the rotational axis of the shearing drum, said shaft means including a valve having a valve recess substantially at the longitudinal center within the periphery of said shaft means for communication with the internal opening thereof, said valve recess extending about a peripheral surface of the shaft means through an angle selected to correspond to at least part of the arcuate face of the shearing drum while directed toward the working face of the mine, and

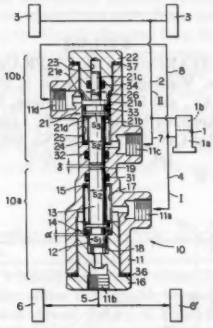
means rotatable with said shearing drum in sealed communication with the valve of said shaft means to control the period while individual ones of said conduit members deliver liquid passed through said valve to said nozzle member.

4,212,498

DUAL TYPE HYDRAULIC CIRCUIT FOR A VEHICLE BRAKE

Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 17, 1978, Ser. No. 961,602
Claims priority, application Japan, Nov. 19, 1977, 52-139128
Int. Cl.² B60T 8/26
U.S. Cl. 303—6 C **8 Claims**



1. A dual type hydraulic circuit for a vehicle brake, which circuit includes (a) a master cylinder provided with first and a second mutually independent pressure chambers in which respective fluid pressure is produced; (b) front wheel cylinders disposed on the left- and right front wheels and rear wheel cylinders disposed on the left- and right rear wheels of a vehicle; (c) a first conduit system connecting a plurality of said wheel cylinders, in which at least one rear wheel cylinder is included, and said first pressure chamber of said master cylinder; (d) a second conduit system connecting all of said wheel cylinders except those connected to said first conduit system and said second pressure chamber of said master cylinder; and (e) a control valve disposed in the midway of said first conduit system for controlling the braking fluid pressure to said rear wheel cylinder connected to said first conduit system, said control valve comprising:

(i) a proportioning valve which has a valve piston to shut a passage formed in said proportioning valve for controlling the hydraulic pressure in said rear wheel cylinder connected to said first conduit system so as to rise at a milder gradient than that in said first pressure chamber of said master cylinder, when the rising hydraulic pressure therein exceeds a predetermined value;

(ii) a differential piston which has a small diameter portion and a large diameter portion, said small diameter portion being adjacent to the end of said valve piston and spaced therefrom a larger distance than the distance required for the movement of said valve piston in shutting said passage, and said large diameter portion having on the same side of said small diameter portion a second pressure-receiving face which is affected by the pressure in said second conduit system and a first pressure-receiving face on the opposite side thereof being larger in area than said second pressure-receiving face and affected by the pressure in said first conduit system; and

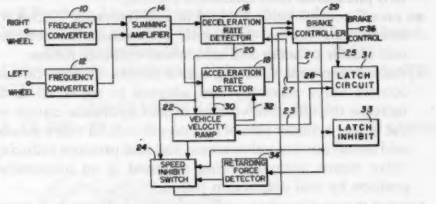
(iii) spring means for constantly biasing said differential piston in a direction away from said valve piston, whereby said differential piston controls said proportioning valve in accordance with the balance relation between the force due to the hydraulic power acting on said first and second pressure-receiving faces and the resilient force of said spring means.

4,212,499

VEHICLE VELOCITY RAMP GENERATOR IN A SKID CONTROL VEHICLE BRAKING SYSTEM

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 837,855, Jun. 30, 1969, abandoned.
This application Feb. 25, 1972, Ser. No. 229,345
Int. Cl.² B60T 8/10
U.S. Cl. 303—103 **5 Claims**



1. A vehicle velocity ramp generator in a skid control vehicle braking system including brake control means having a pulse output signal varying between a brake inhibit value and a normal braking value and signal generating means for generating a signal varying in accordance with the vehicle wheel speed, comprising in combination:

(a) a storage means for storing a charge proportional to the magnitude of said vehicle wheel speed signal, including a diode connected at one terminal to said signal generating means and at another terminal to one terminal of a capacitor;

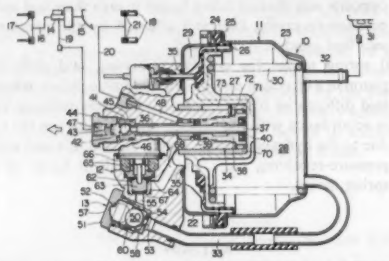
(b) charge control means connected to said brake control means for discharging said storage means at a controlled rate when the output of said brake control means is at its brake inhibit value and for inhibiting the discharge of said storage means when the output of said brake control means is at its normal braking value in response to a signal proportional to the output of said brake control means, including a transistor in a circuit connected to the common terminals of said diode and capacitor; and

(c) circuit means connected to said storage means for generating a vehicle velocity ramp current proportional to the vehicle speed, including a transistor having a base electrode connected to said capacitor and a collector electrode connected to an output terminal.

4,212,500
ANTISKID BRAKE CONTROL ARRANGEMENT FOR VEHICLE WHEELS

Masamoto Ando; Yoshihisa Nomura, both of Toyotashi, and Takaaki Ohta, Okazakishi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Jun. 1, 1978, Ser. No. 911,667
Claims priority, application Japan, Jun. 2, 1977, 52-65172
Int. Cl.[2] B60T *8/10, 13/68*
U.S. Cl. 303—115 **4 Claims**



1. An antiskid brake control system for a plurality of wheels of a wheeled vehicle having brakes actuatable from a fluid source of pressure comprising:

a control valve assembly located in hydraulic circuit between a hydraulic master cylinder and cylinder means for said wheels, said control valve assembly comprising,

a diaphragm piston movable within a housing and defining two pneumatic fluid chambers therein;

an on-off control valve located in said hydraulic circuit for interrupting normal hyrdraulic communication between said master cylinder and said wheel cylinder means;

hydraulic pressure reducing valve means located in said control valve assembly and adapted to move so as to increase the effective volume of said hydraulic circuit on the wheel cylinder side of said on-off control valve means, said on-off control valve means and said pressure reducing valve means normally being disposed in an inoperative position by said diaphragm piston,

passage means providing communication between said pneumatic fluid chambers,

electromagnetic means operably located in said passage means for normally allowing communication between said two pneumatic fluid chambers, said electromagnetic means being responsive to a locked condition of at least one of said wheels upon brake application to close communication between said two pneumatic chambers and admit ambient air to one of said chambers, and

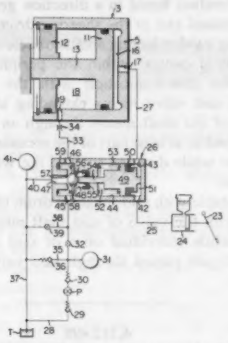
deceleration responsive and inertia actuatable fluid flow control means located in said passage means, said flow control means being movable in accordance with vehicle deceleration between a first position allowing a relatively rapid flow of fluid through said passage means and a second position allowing a comparatively restricted flow of fluid through said passage means.

4,212,501
VEHICULAR ANTI-SKID BRAKE DEVICE

Yoshitaka Miyakawa, Kawagoe; Makoto Sato, Kamifukuoka, and Etsuo Fujii, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 965,306
Claims priority, application Japan, Jun. 28, 1978, 53-78442; Aug. 10, 1978, 53-97722; Sep. 20, 1978, 53-116263
Int. Cl.[2] B60T *13/70*
U.S. Cl. 303—116 **13 Claims**

1. A vehicular anti-skid brake device comprising a brake oil pressure generating oil source, a separate control oil pressure generating source, at least one braking device provided with a brake oil chamber connected to receive brake oil pressure generated in said brake oil pressure generating source so as to produce a braking force and a control oil chamber connected to receive control oil pressure generated in said control oil pressure generating source; and valve means responsive to

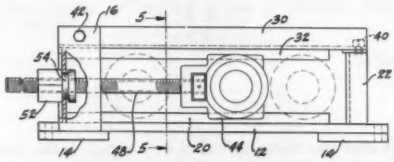


brake oil pressure so that when said brake oil pressure is below a predetermined value, working oil within said control oil chamber and control pressure oil delivered from said control oil pressure generating source are released and when said brake oil pressure exceeds a predetermined level, control pressure oil delivered from said control oil pressure generating source is introduced into said control oil chamber.

4,212,502
BEARING TAKE-UP FRAME

Ernest R. Ames, Wallingford; Hilarius S. Struttmann, Maysville, both of Ky., and Erwin R. Carrigan, Manchester, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 3, 1978, Ser. No. 948,279
Int. Cl.[2] F16C *29/00*
U.S. Cl. 308—3 R **5 Claims**



1. A bearing take-up frame having upper and lower elongated horizontal members and vertical end members extending between said horizontal members at the ends thereof and a guide rail fixed to and extending along each of said horizontal members for guiding a slidably adjustable bearing block therebetween, one of said vertical end members at one end of the frame being fixed to one of said horizontal members and detachably connected to the other horizontal member, the other of said vertical end members at the other end of the frame comprising an upper portion and a lower portion, each of said portions extending vertically substantially halfway between said upper and lower horizontal members and each of said portions being fixed at one end to one of said horizontal members and meeting at its free end with the free end of the other portion along a line midway between said guide rails, each of said end member portions having a semicircular notch in its free end, which notches together form a circular perforation for journalling and retaining a transmission screw nut therein,

and vertical side plates for connecting said horizontal members at said other end of the frame, and said vertical side plates being fixed at one end to one of said horizontal members and detachably connected to the other of said horizontal members.

4,212,503

DRAWERS AND DRAWER RUNNERS

Leon G. Litchfield, and Terence Hardy, both of Nether Heage, England, assignors to L. B. (Plastics) Limited, Derby, England

Filed Apr. 24, 1978, Ser. No. 899,559

Claims priority, application United Kingdom, Nov. 26, 1977, 49329/77

Int. Cl.[2] F16C *21/00*

U.S. Cl. 308—3.6 **12 Claims**

1. A drawer runner adapted to be mounted on a support structure in a horizontal position with one end of the runner directed towards the front of the structure and so that a pair of such runners mounted at opposite sides of the support structure may slidably support a drawer on upper surfaces thereof for movement relative to the support structure, the drawer runner comprising an elongated member having a longitudinal channel formed in a face thereof which is directed inwardly of the support structure in use, a stop member projecting into said channel at a position spaced inwardly from said front of the runner and having a rearwardly directed face, the stop member being arranged to co-operate with a projection on the drawer to prevent complete withdrawal of the drawer from the support structure, a portion of the upper surface of said runner being cut away in the region of said stop member whereby to permit upward tilting of the drawer about the front end of the runner to disengage the projection from the stop member and enable the drawer to be disengaged from the support structure.

4,212,504

BACKING DEVICE FOR A WORKING ROLL OF A ROLL STAND

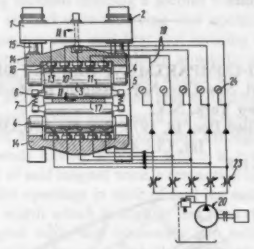
Nikolai I. Krylov, 1 Novokuzminskaya ulitsa, 25, kv. 26, Moscow; Ilya A. Toder, ulitsa Pobedy, 94, korpus 3, kv. 6, Elektrostal Moskovskoi oblasti; Valery A. Tolstykh, Poslannikov pereulok, 11/14, kv. 103, Moscow; Gennady I. Tarabaev, prospekt Juzhny, 3, korpus 4, kv. 74, Elektrostal Moskovskoi oblasti; Igor M. Makeev, Frunzenskaya naberezhnaya, 36, kv. 227, Moscow; Georgy S. Safarov, ulitsa Dzerzhinskogo, 5/8, kv. 12, Belaya Kalitva Rostovskoi oblasti; Alexei V. Birjulev, ulitsa Sverdlova, 50, kv. 24, Belaya Kalitva Rostovskoi oblasti; Anatoly I. Bakanov, ulitsa Dzerzhinskogo, 2/7, kv. 4, Belaya Kalitva Rostovskoi oblasti, and Evgeny I. Sofronov, ulitsa Junykh Lenintsev, 105, korpus 1, kv. 35, Moscow, all of U.S.S.R.

Filed Feb. 26, 1979, Ser. No. 15,166

Int. Cl.[2] F16C *32/06*

U.S. Cl. 308—9 **12 Claims**

1. A backing device for working roll of a roll stand placed between the housings of said roll stand and mounted in the guide windows of said housings where pressure screws are disposed; said device comprising a back-up roll placed between the housings, the ends of said back-up roll being mounted in the guide windows of said housings; a hydrostatic bearing having a body mounted on said back-up roll and having a shell adapted to adjoin said back-up roll so that the internal surface of said shell is spaced apart from the barrel of said back-up roll and is provided with pockets connected in the course of rolling to a source of fluid under pressure; a supporting beam whose ends are pressed against said back-up roll by said pressure screws; hydraulic cylinders mounted between said supporting beam and said hydrostatic bearing and arranged along said back-up roll so that there is at least one pocket of said bearing shell for each of said hydraulic cylinders, the chambers of said hydraulic cylinders being connected in the course of rolling to the source of fluid under pressure, whereby said hydraulic



cylinders act upon the body of said hydrostatic bearing for regulating the thickness of the stock being rolled; conduits for connecting in the course of rolling the pockets of said shells and the chambers of said hydraulic cylinders to a single source of fluid under pressure; and throttles in the conduits that connect the pockets of said shell to the source of fluid under pressure.

4,212,505

BEARING ASSEMBLIES

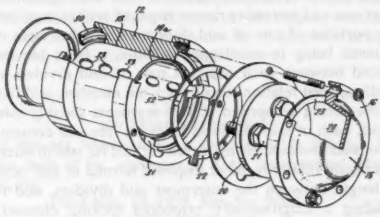
Anthony D. Dolton, Maidenhead, England, assignor to Vandervell Products Limited, Maidenhead, England

Continuation of Ser. No. 862,612, Dec. 20, 1977, abandoned. This application Mar. 6, 1979, Ser. No. 18,350

Claims priority, application United Kingdom, Dec. 21, 1976, 53423/76

Int. Cl.[2] B61F *17/00*; F16C *33/66*

U.S. Cl. 308—79 A **7 Claims**



1. A bearing assembly for supporting an axle for rotation comprising:

a housing having a cylindrical bore, said housing having an opening at one end of the bore to receive an end journal of said axle;

an end cap closing the other end of the bore and providing a lubricant reservoir within said housing bounded by said end cap;

a cylindrical bearing liner seated in the bore for receiving said end journal of said axle;

a plurality of slot openings in the bore of said housing extending along the length of said bore, each slot opening having an open end positioned adjacent said end cap, said open ends of said slot openings communicating directly with said lubricant reservoir, and being spaced circumferentially around said bore, at least one slot opening being disposed near a top portion of said cylindrical bore;

a plurality of opening means in said bearing liner in register

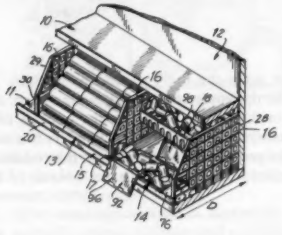
with said plurality of slot openings in said bore, each said plurality of opening means comprising a series of spaced apertures in said bearing liner, each said series being in communication with respective said slot openings in said bore to enable lubricant to pass directly from said lubricant reservoir, through said plurality of slot openings in said bore and respective opening means in said bearing liner to said end journal of said axle rotating within said bearing liner.

4,212,506

MULTI-COMPARTMENT DISPLAY DEVICE

Milton J. Merl, New City, N.Y., assignor to Marlboro Marketing, Inc., New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,335
Int. Cl.[2] A47B *57/00*
U.S. Cl. 312—118 **10 Claims**



1. An adjustable inventory display device for defining lateral subdivisions of an elongate shelf comprising a plurality of parallel disposed lateral divider members formed of polymeric material, said members including a multiplicity of regularly spaced, vertically and horizontally offset receiver apertures, a plurality of back bin members extending between and connecting said divider members, said back bin members being disposed normal to said divider members and including first and second relatively slidable segments, each said segment including at one end mounting means engaged within receiver aperture portions of one of said dividers, the other ends of said segments being in overlapped relation, a front bin member secured between each adjacent pair of said dividers in forwardly spaced relation to said back bin member, said front bin member being comprised of two segments slidably interconnected, each of said segments having a free end connected to one of said dividers, clamp means formed on said dividers, and an elongate runner member disposed normal to and extending the length between the outermost said dividers, said runner including a longitudinally extending locking channel, said clamp means of said dividers being adjustably fixed within said channel at spaced positions corresponding to the spacing of said dividers whereby said dividers, bins and runner together define a plurality of laterally offset enclosures, the lateral extent of said enclosures being dependent upon the adjusted position of the segments of said back bin and the position of said clamps in said runner.

4,212,507

SELECTIVE INTERCONNECTION SYSTEM AND CONNECTOR

Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 11, 1976, Ser. No. 740,999
Int. Cl.[2] H01R *29/00*
U.S. Cl. 339—18 B **4 Claims**

1. A cross connect system for a plurality of bundles of discrete communications conductors, said system comprising:

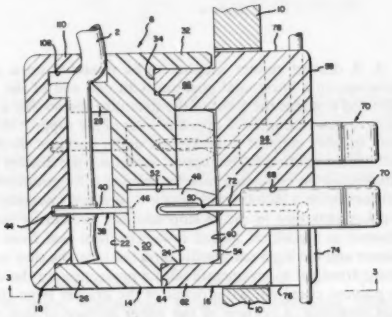
a panel having oppositely directed first and second sides, and an electrical connector assembly for each of said bundles removably mounted in said panel,

each of said assemblies comprising a cable connector housing and a cross connection connector housing, each of said cable connector housings having a conductor receiving face and a mating face, said faces being oppositely directed,

each of said cross connection connector housings having a mating face and a cross connecting face, said faces in said cross connection connector housing being oppositely directed and having a plurality of openings extending therebetween,

said housings being mated with each other with said mating faces opposed to each other, said conductor receiving face of said cable connector housings being accessible from said first side of said panel and said cross connecting face of said cross connection connector housing being accessible from said second side of said panel,

a plurality of double ended electrical contact terminals mounted in, and extending between said faces of, said



cable connector housing, each of said double ended terminals having a wire-receiving portion at said conductor receiving face and a receptacle portion at said mating face, said conductors of each of said bundles extending to said conductor receiving face of one of said cable connector housings and being connected to said wire-receiving portions of said double ended terminals of said one of said cable connector housings,

a plurality of jumper wires having jumper wire terminals on their ends, each jumper wire extending between two of said cross connection connector housings on said second side of said panel member and having its jumper wire terminals inserted through said openings in said cross connecting faces of said two cross connection connector housings and into said receptacle portions of selected double ended terminals in the mating cable connector housings whereby,

said bundles are disposed adjacent to said first side and said jumper wires are adjacent to said second side, and said conductors of said bundles are changeably interconnected by said jumper wires on said second side.

4,212,508

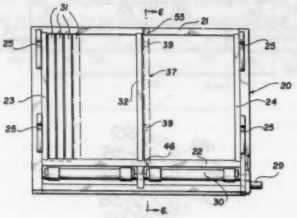
COMPUTER INTERFACE RECEIVER RETROFIT KIT

Quentin E. Cline, Grottoes, and Paul D. Floyd, Lyndhurst, both of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

Filed Apr. 17, 1979, Ser. No. 30,759
Int. Cl.[3] H01R *29/00*
U.S. Cl. 339—18 B **10 Claims**

10. In a conversion kit for a receiver which interfaces with a control panel, said receiver having a frame including a pair of spaced opposing parallel rails of rectangular cross section, an adapter bar assembly to span the space between said rails in

right angular relationship thereto and having a pair of spaced locating and locking slots in one longitudinal edge thereof to receive one pair of locator lugs on one side of a control panel, the adapter bar assembly having corner notches which are square in its opposite ends and in its longitudinal edge which is remote from said locating and locking slots, a rigid locking tongue projecting from one surface of one corner notch for



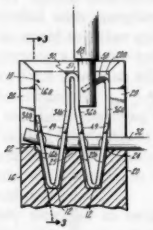
reception in a cooperating locking recess in the opposing face of one rail, a guide projection extending from one surface of the other corner notch at right angles to the notch surface carrying said locking tongue, and a yielding detent means on the second surface of the last-named notch for interengagement with a detent recess in the opposing surface of the other rail.

4,212,509

ELECTRICAL CONNECTOR ASSEMBLY

Hubert C. Brooks, and Alan E. Stroh, both of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Dec. 11, 1978, Ser. No. 968,159
Int. Cl.² H01R *9/08*
U.S. Cl. 339—95 D **3 Claims**



1. An electrical connection of a magnet wire having a film type insulation coating thereon to a lead wire conductor comprising:

an insulative housing having at least one connector clip receiving cavity therein; each said cavity being defined by a basewall and four upstanding sidewalls and being open at the end opposite said basewall; said basewall having an upstanding support platform extending toward the open end of said cavity and located between a first pair of opposing sidewalls to define first and second valleys in said cavity; said platform having a top surface spaced from the open end of said cavity; a magnet wire receiving guide slot having an open end and a closed end and being formed in each of said opposing sidewalls; said guide slots extending in said first opposing sidewalls from the open end of said cavity along axes generally parallel to each other and terminating at their closed ends at substantially the same level as the top surface of said platform;

said magnet wire being positioned in said guide slots and extending longitudinally through said cavity across the top surface of said support platform;

a connector clip of a generally W-shaped configuration comprising a single strip of metal stock having an intermediate bight portion, diverging first and second leg sections extending downwardly from opposite ends of the intermediate bight portion, and diverging third and fourth leg sections extending upwardly and connected, respectively, at their lower ends by first and second reverse bends with the lower ends of said first and second downwardly extending leg sections; said first and third leg sections defining a first V-shaped leg structure, and said second and fourth leg sections defining a second V-shaped structure; first and second wire-receiving slot openings formed in said connector clip; said first slot opening bisecting said first reverse bend and extending upwardly in both of said first and third leg sections; said second slot opening bisecting said second reverse bend and extending upwardly in both of said second and fourth leg sections; a wire entry portion of a slot opening extending through each of said return bends having a width which is greater than the diameter of said magnet wire; a respective contact portion of said slot openings in each of said leg sections having a reduced width which is slightly less than the diameter of said magnet wire; said connector clip including contact means for forming an electrical connection with said lead wire conductor; said connector clip including locking means engagable with at least one of said sidewalls for retaining said connector clip in said cavity;

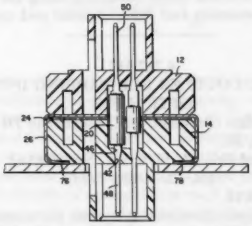
said connector clip being inserted into said cavity with said return bends received in respective valleys of said cavity and with said slot openings in alignment with said guide slots in said opposing walls; said magnet wire extending through said slot opening in each of said leg sections and being wedged between the opposing edges of the reduced width contact portion of each said slot opening to provide eight zones of electrical and mechanical connection between said magnet wire and said connector clip; said leg sections each being inclined relative to the longitudinal axis of said magnet wire; each of said V-shaped leg structures being movable over said magnet wire as said connector clip is inserted into said cavity to provide an insulation coating stripping motion by the opposing edges of each said slot opening which forms said zones of electrical and mechanical connection; said stripping motion having a first component which causes penetration of said insulation coating laterally of the axis of said magnet wire and a second component which causes the insulation coating to be stripped axially on said magnet wire.

4,212,510

FILTERED HEADER

Leon T. Ritchie, Mechanicsburg, and Michael S. Peppler, Lancaster, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 14, 1978, Ser. No. 960,532
Int. Cl.² H01R *3/06*
U.S. Cl. 339—147 R **17 Claims**



1. A filtered header or feedthrough connector comprising:

a pair of hermaphroditic housing members of insulative material each having a planar first mating face and a

profiled second mating face, a recess in each said planar face, said recesses together defining a cavity, each said recess having a profiled periphery and a plurality of free standing posts, said posts and profiled periphery defining a plurality of filter receiving receptacles, and a like plurality of terminal bores each extending from said second faces to a respective receptacle;

a ground system having a conductive rubber sheet with a plurality of apertures therein, each said aperture being aligned with a respective filter receiving receptacle in said housing members, said conductive rubber being held between said first mating faces; and

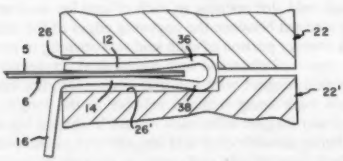
a plurality of filtered terminal assemblies each including an elongated terminal with a filter sleeve secured intermediate the ends thereof and received in said cavity with the filter sleeve engaging said conductive sheet and the ends of the terminal projecting from said second mating faces to engage associated terminals.

4,212,511

ELECTRICAL CONNECTIONS FOR CONDUCTORS IN THIN SUBSTRATES

Robert D. Malucci, Dauphin, and Charles E. Reynolds, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 13, 1978, Ser. No. 960,425
Int. Cl.[2] H01R *11/08*
U.S. Cl. 339—276 T **7 Claims**



1. A crimped electrical connection between a stamped and formed metallic connecting device and a flat conductor, said crimped electrical connection being characterized in that:

said connecting device comprises a pair of opposed cantilever beams connected by an arcuate bight section, said conductor being between said beams with portions of said beams being against said conductor,

said beams being in a preloaded and flexed condition against said conductor, portions of said bight section being severely plastically deformed and serving to maintain said beams in said preloaded and flexed condition against said conductor whereby,

said one beam is resiliently biased against, and maintained in electrical contact with, said conductor,

the preloaded and flexed condition of said beams and the function of said bight section in maintaining said beams in said preloaded and flexed condition being the sole means serving to maintain said beams against said conductor.

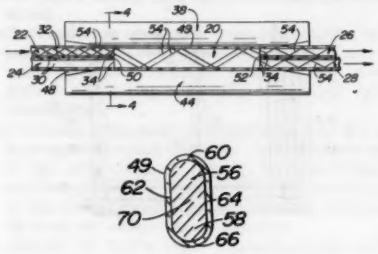
4,212,512

FIBER OPTIC COUPLER FOR TAPPING INTO FIBER OPTIC LINE

Malcolm H. Hodge, Claymont, Del., assignor to TRW Inc., Elk Grove Village, Ill.

Filed Feb. 21, 1978, Ser. No. 879,162
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 **17 Claims**

1. In a fiber optic transmission system for transmitting desired portions of light signals between ends of at least one optical fiber and at least two spaced optical fibers, the improvement comprising distributing means for coupling light between and interfacing with the ends of such fibers and having a transverse sectional configuration substantially uniform throughout the length thereof which is determinative of the light distribution between such optical fibers interfacing with said distributing means; said transverse sectional configuration being defined by first and second longitudinal lobes having opposed end surfaces each of which is for interfacing with and



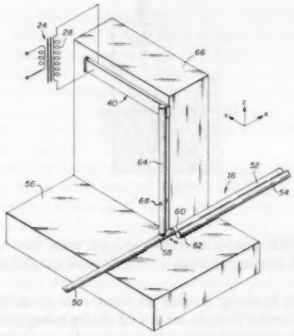
effecting a light signal transmissive connection with an optical fiber end; said distributing means having an interconnecting portion between said first and second lobes predeterminately formed for determining the proportion of light passing between said first and second distributing means lobes when a light signal is passed through at least one of said lobes.

4,212,513

PULSE TRANSFORMER TECHNIQUE FOR OPTICAL SWITCH

Robert L. Gravel, Stow, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,865
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 **3 Claims**



1. A switch for use in an optical circuit responsive to a relatively low voltage power source, the circuit having an input portion and at least two output portions cooperating with said switch, comprising:

a piezoelectric device responsive to a relatively high voltage, a cantilever rod mounted for pivotal movement having one end coupled to said piezoelectric device and the other end coupled to an end of the input portion of the optical circuit and wherein said rod switches the input to one of the outputs in response to said piezoelectric device,

a step-up transformer having its secondary windings coupled across said piezoelectric device for providing the relatively high voltage to the piezoelectric device, and

a drive circuit, including a terminal for connection to a relatively low voltage power source, responsive to a drive

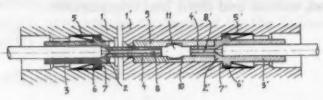
signal pulse of relatively low voltage, said drive circuit being coupled to the primary windings of said step-up transformer, whereby in response to the relatively low voltage drive signal said drive circuit energizes said step-up transformer such that said piezoelectric device is actuated by the required relatively high voltage, in response thereto, and couples the input portion from one of said output portions to another of the said output portions.

4,212,514

CONNECTORS FOR OPTICAL CONDUCTORS UTILIZING ELASTOMERIC PADS

Jean-Claude Prunier, Herblay, and Yves Bellemon, Le Pecq, both of France, assignors to Societe Nouvelle de Connexion, Boulogne-Billancourt, France

Filed Mar. 3, 1978, Ser. No. 882,995
Claims priority, application France, Mar. 28, 1977, 77 09119
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.21 **12 Claims**



1. A connector for optical conductors, comprising: two opposite bodies provided with complimentary fixing means whereby they may be urged together under axial pressure,

each said body carrying a tubular member adapted to receive and to have fixed therein an end of one of the optical conductors to be connected,

each said tubular member comprising a barrel portion having at its end a central bore adapted to receive therein an optical conductor fixed in such a manner that the end of the optical conductor is located in the same plane as the end of said barrel portion,

a coupling member arranged to receive the ends of said tubular members and having located therein a transparent elastomeric pad having a refractive index close to or substantially the same as that of the optical conductors to be connected and into engagement with which said tubular members can be brought under the action of said complimentary fixing means,

said coupling member and/or said elastomeric pad being so shaped as to define between them a space traversed by a portion of said pad and into which said pad can deform under the axial contact pressure exerted thereon by said tubular members,

said coupling member comprising a sleeve so located in one of said bodies that said pad is constantly in contact with the barrel portion of said tubular member carried by the same body, and

said barrel portion of said other tubular member being capable of penetrating the sleeve by sliding into the latter, and

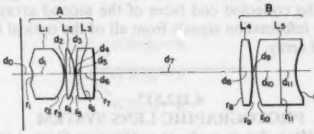
said pad being a full one-piece pad having a generally cylindrical shape in its rest position and passing through said sleeve into said space into which it may deform whereby the axial contact pressure exerted on said pad by said tubular members is insufficiently significant to introduce into said pad constraints giving rise to deterioration in the transmission of light.

4,212,515

WIDE-VISUAL-FIELD MICROSCOPE OBJECTIVE LENS SYSTEM

Hideo Itaya, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1978, Ser. No. 884,551
Claims priority, application Japan, Mar. 14, 1977, 52-27699
Int. Cl.[2] G02B *21/02*
U.S. Cl. 350—175 ML **4 Claims**



1. A wide-visual-field microscope objective lens system comprising a front lens group comprising a first negative meniscus lens component having a concave surface on the object side, a second positive lens component and a third positive cemented lens component, and a rear lens group comprising a fourth positive lens component and a fifth negative cemented lens component, said rear lens group is arranged widely apart from said front lens group and said lens system satisfying the following conditions:

(1) $2.8f \leqq d_7$
(2) $0.3f \leqq |r_1| \leqq 0.39f$
(3) $0.85f \leqq |r_{12}| \leqq 1.2f$
(4) $1.1f \leqq f_A \leqq 1.25f$

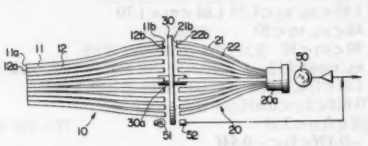
wherein the reference symbol f represents focal length of the lens system as a whole, the reference symbol f_A designates focal length of said front lens group as a whole, the reference symbol r_1 denotes radius of curvature on the object side surface of the first lens component, the reference symbol r_{12} represents radius of curvature on the image side surface of the fifth lens component and the reference symbol d_7 designates the airspace formed between the front and rear lens groups.

4,212,516

SCANNER WITH MULTIPLE OPTICAL FIBRES

Ichiro Sawamura, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,882
Claims priority, application Japan, Mar. 14, 1977, 52-29595
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.24 **8 Claims**



1. A scanner with multiple optical fibres, comprising a first array of a multitude of optical fibres having one of their end faces aligned along a rectilinear line and having their other end faces separated from each other and disposed at equal intervals about a circle, said one end faces being adapted to have an image of a specimen to be examined focussed thereon; a second array of a multitude of optical fibres each having one of their end faces disposed in opposing relationship with the said other end faces of the fibres of the first array and having their other end faces collected together at a single location; a scanning disc rotatably disposed between the opposing end faces of the optical fibres of the first and the second array and having formed therein a single signal transmission aperture for passing an image information signal from said other end of an optical

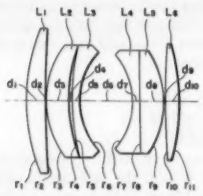
fibre of the first array to said one end of an associated optical fibre of the second array in a sequential manner and also having formed therein a plurality of timing apertures equal in number to the number of optical fibres in said first and second array, respectively and aperture sensing means including a light source and a light receiving element disposed on opposite sides of said disc so as to pass light through said timing apertures in a sequential manner to identify the particular channel through which the signal transmission between the first and the second array occurs; a single phototube disposed in opposing relationship with the collected end faces of the second array for receiving the information signals from all of the optical fibres in said second array.

4,212,517

PHOTOGRAPHIC LENS SYSTEM

Toru Fujii, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,928
Claims priority, application Japan, Mar. 10, 1977, 52-2635177
Int. Cl.[2] G02B 9/60
U.S. Cl. 350—217 **3 Claims**



1. A photographic lens system comprising a first, second, third, fourth and fifth lens components, said first lens component being a positive meniscus lens arranged convex toward the object side, said second lens component being a positive meniscus lens arranged convex toward the object side, said third lens component being a negative meniscus lens arranged convex toward the object side, said fourth lens component being a negative cemented meniscus doublet comprising a biconcave lens with its surface of smaller radius of curvature arranged toward the object side and a biconvex lens with its surface of smaller radius of curvature arranged toward the image side, said fifth lens component being a biconvex lens with its surface of smaller radius of curvature arranged toward the image side, said photographic lens system satisfying the following conditions:

(1) $1.69<n_1, n_2<1.75\ 1.68<n_3<1.70$
(2) $48<\nu_1, \nu_2<50$
(3) $30<\nu_3<32$
(4) $n_5, n_6=1.713$
(5) $1.2f<f_1<1.3f$
(6) $0.62f<f_{12}<0.63f$
(7) $3f<f_{123}<3.2f$
(8) $-0.47f<f_4<-0.44f$
(9) $0.5f<f_5<0.6f$
(10) $1.06f<f_6<1.07f$
(11) $4f<r_2<4.5f$
(12) $0.67f<r_4<0.7f$
(13) $1.0f<r_5<1.2f$
(14) $0.29f<r_6<0.3f$
(15) $-0.35f<r_7<-0.29f$
(16) $3.9f<r_{10}<4.7f$
(17) $0.017f<d_4<0.02f$
(18) $0.23f<d_6<0.25f$
(19) $0.13f<d_3+d_4+d_5<0.15f$
(20) $d_7+d_8=0.1319f$
(21) $0.08<n_5-n_4<0.11$

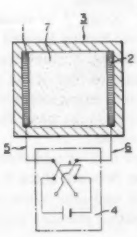
wherein reference symbol f represents the focal length of the lens system as a whole, reference symbol f_1 represents the focal length of the first lens component, reference symbols f_4 and f_5 respectively represent focal lengths of respective lenses constituting the fourth lens component, reference symbol f_6 represents the focal length of the fifth lens component, reference symbol f_{12} represents the total focal length of the first and second lens components, reference symbol f_{123} represents the total focal length of the first, second and third lens components, reference symbol r_2 represents the radius of curvature of the surface on the image side of the first lens component, reference symbol r_4 represents the radius of curvature of the surface on the image side of the second lens component, reference symbols r_5 and r_6 respectively represent radii of curvature of respective surfaces of the third lens component, reference symbols r_7 and r_8 respectively represent radii of curvature of the surface on the object side and cemented surface of the fourth lens component, reference symbol r_{10} represents the radius of curvature of the surface on the object side of the fifth lens component, reference symbol d_4 represents the airspace between the second and third lens components, reference symbol d_6 represents the airspace between the third and fourth lens components, reference symbol $(d_3+d_4+d_5)$ represents the distance from the surface on the object side of the second lens component to the surface on the image side of the third lens component, reference symbol (d_7+d_8) represents the thickness of the fourth lens component, and reference symbols n_1, n_2, n_3, n_4, n_5 and n_6 respectively represent refractive indices of respective lenses in the order from the object side toward the image side, and ν_1, ν_2 and ν_3 respectively represent Abbe's numbers of the first, second and third lens components.

4,212,518

IMAGE DISPLAY DEVICE

Hiroyuki Imataki; Masatsune Kobayashi, and Tokuya Ohta, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

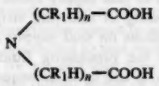
Filed Mar. 28, 1978, Ser. No. 890,966
Claims priority, application Japan, Feb. 13, 1977, 52-15752; Feb. 14, 1977, 52-15531; Apr. 8, 1977, 52-40012
Int. Cl.[2] G02F 1/17
U.S. Cl. 350—357 **14 Claims**



1. An improved image display device comprising in combination:

(a) a cell container;
(b) at least a pair of electrodes; and
(c) an electrically responsive electrochromic medium accomodated in said cell container, said electrochromic medium comprising a complexon and a redox reactive organic substance, said complexon being a member selected from the group consisting of:

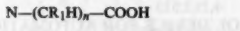
(1) an aminocarboxylic acid compound containing 1 to 3 aminocarboxylic acid groups represented by the following formula(I)



(I)

wherein R_1 represents hydrogen, methyl or hydroxyphenyl and n is 1 or 2;

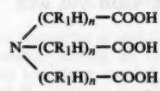
(2) an aminocarboxylic acid compound containing 1 to 2 aminocarboxylic acid groups represented by formula(I) above and 1 to 2 aminocarboxylic acid groups represented by the following formula(II):



(II)

wherein R_1 and n have the same meaning as in formula(I);

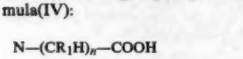
(3) an aminocarboxylic acid compound containing an aminocarboxylic acid group represented by the following formula



(III)

wherein R_1 and n have the same meaning as in formula(I);

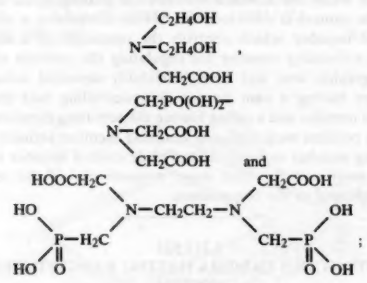
(4) an aminocarboxylic acid compound containing 2 aminocarboxylic acid groups represented by the following formula(IV):



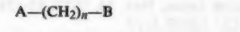
(IV)

wherein R_1 and n mean the same as in formula(I);

(5) an aminocarboxylic acid compound selected from the group consisting of

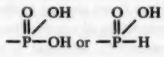


(6) nitrogen, phosphorus and arsenic homologues thereof containing 1 to 2 groups represented by the following formula(V):



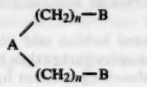
(V)

wherein n is 1 or 2, A represents N, P or As and B represents —COOH,



with the proviso that B is not —COOH when A is N;

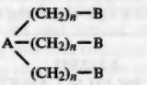
(7) nitrogen, phosphorus and arsenic homologues thereof containing 1 to 2 groups represented by the following formula(VI):



(VI)

wherein n, A and B mean the same as in formula(V);

(8) nitrogen, phosphorus and arsenic homologues thereof containing 1 group represented by the following formula(-VII):



(VII)

wherein n, A and B mean the same as in formula(V); and

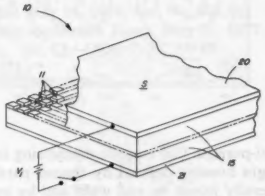
(9) mixtures thereof.

4,212,519

LIGHT CONTROL DEVICE AND FABRICATION METHODS THEREFOR

Karl H. Drexhage, and Joseph J. Wrobel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1978, Ser. No. 882,514
Int. Cl.[2] G02F *1/28*
U.S. Cl. 350—362 **27 Claims**



1. A method of manufacturing a light-control device, said method comprising:

(a) forming an array comprising a plurality of discrete light-control elements, each of said elements being located in a precisely predetermined position relative to the other of said elements; and

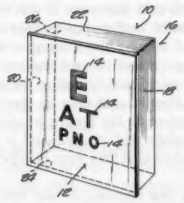
(b) disposing said array in an elastomeric matrix in a manner maintaining such predetermined positional relation of said elements.

4,212,520

EYE TESTING DEVICE

Ivan Klimsa, 3825 W. 9th St., Waterloo, Iowa 50702

Filed Jan. 3, 1978, Ser. No. 866,764
Int. Cl.[2] A61B *3/02*
U.S. Cl. 351—37 **9 Claims**



1. An eye testing device including a front chart having a

light-colored, opaque outer face and a plurality of cut-out openings in the shape of letters, numerals, or similar characters; and

contrast means located behind said chart and having an opaque surface of a color darker than that of the outer face of said chart for absorbing ambient light transmitted in a direction toward the outer face of said chart and through said cut-out openings to provide a contrast between said cut-out openings and the outer face of said chart,

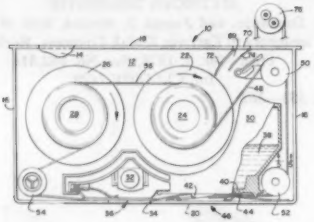
said contrast means includes a box mounted on the back side of said chart and cooperating therewith to define a light-absorbing chamber which is substantially closed except for said cut-out openings, the interior surfaces of said box being covered with a light-absorbing material.

4,212,521

MOTION PICTURE FILM CASSETTE HAVING REMOVABLE FILM STRIPPING WEB

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 29, 1978, Ser. No. 974,486
Int. Cl.² G03C *11/00*
U.S. Cl. 352—130 **4 Claims**



1. A multi-purpose film cassette comprising in combination:

a light-tight housing defined by spaced parallel side walls peripherally joined by end walls and by top and bottom walls, respectively;

a pair of supply and take-up spools rotatably supported between said side walls;

a photographic film strip having opposite ends connected to said spools and comprising a transparent carrier base on which an emulsion comprised of successive layers of photographic materials is provided, said layers including a positive image forming layer adjoining said carrier base and at least an image recording layer superimposed over said positive image forming layer;

film strip guide means for guiding said film strip between said supply and take-up spools in a film path including an exposure station and a processing station, said processing station including means for depositing a thin layer of processing fluid on the emulsion surface as said film strip is rewound from said take-up spool to said supply spool, and wherein the improvement comprises:

a separate stripping web having one end releasably coupled to said supply spool so that said stripping web will be interwound with said film strip in alternate convolutions thereon, the other end opposite said one end initially extended to said take-up spool along a web path separate from said film path and its said stations and interwound with convolutions of said film strip on said take-up spool without connection to said take-up spool, and the length of said web relative to the length of said film strip being such that said other end of said web is drawn from said take-up spool when said film strip is fully rewound on said supply spool;

means defining an exit opening in said housing; and

web guide means for engaging and guiding said other end of said stripping web along a path separate from said film path and the initial web path and through said exit opening once said web has been substantially entirely wound on said supply spool and is then unwound therefrom upon unwinding rotation of said supply spool;

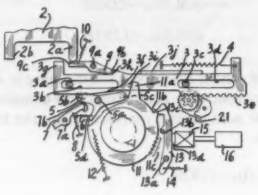
so that during processing of said film strip and rewinding thereof in convolutions on said supply spool, said stripping web overlies the processing fluid and said inner layers of said film strip and upon subsequent unwinding of both said film strip and said stripping web and corresponding travel thereof in separate paths, diverging separation of said stripping web from said film strip causes at least a portion of said inner layers to be retained by adhesion on said stripping web as said web is advanced through said exit opening and out of said cassette housing.

4,212,522

SHUTTER CONTROL DEVICE FOR AUTOMATIC FOCUSING CAMERA

Kiyoshi Kitai; Yukio Morino; Shogo Kato, and Ichiro Nemoto, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,731
Claims priority, application Japan, Nov. 18, 1977, 52-138736
Int. Cl.² G03B *7/08, 9/08*
U.S. Cl. 354—25 **3 Claims**



1. A shutter control device for an automatic focusing camera capable of automatically focusing a photographic lens by a system actuated by a signal produced by a focus detection module when the distance between the photographic object and the camera is detected, the device comprising a shutter control member which controls the operation of a shutter blade, a focusing member for regulating the position of the photographic lens, and a single slidably mounted actuating member having a cam portion for controlling said shutter control member and a spring biasing the actuating member into its rest position such that said actuating member actuates said focusing member and said shutter blade control member in the initial stage and the final stage, respectively, of the return travel thereof to the rest position.

4,212,523

AUTO-FOCUS CAMERA HAVING RANGEFINDER SYSTEM

Seiji Yamada; Shinji Tominaga, both of Sakai; Yasuzi Kogure, Kawanishi, and Toshinori Imura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,776
Claims priority, application Japan, Nov. 18, 1977, 52-139195
Int. Cl.² G03B *3/10*
U.S. Cl. 354—25 **14 Claims**

1. An automatic focus control system for a camera with an objective lens assembly, said system comprising:

a rangefinder means for generating a zone signal indicative of the distance zone from among a plurality of contiguous distance zones extending along the line of sight path of the objective lens assembly whereat a target object to be photographed is located;

an electric power source;

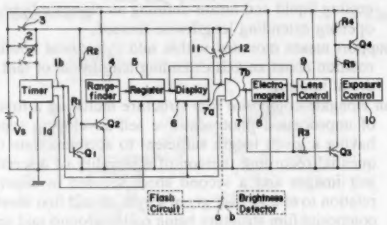
a manually actuable power switch connected to said electric power source;

a delay means connected to said power switch for generat-

ing an output signal a predetermined time after actuation of said power switch, said predetermined time sufficient to enable said rangefinder means to achieve stable operation;

a gating means connected to said rangefinder means and said delay means for passing said zone signal therethrough in response to said output signal of said delay means;

a lens drive mechanism for unidirectional displacement of the objective lens means from a first extreme position toward a second extreme position when released;



a release means, connected to said delay means and said lens drive mechanism, having an electromagnetic unit for releasing said lens drive mechanism in response to said output signal of said delay means; and

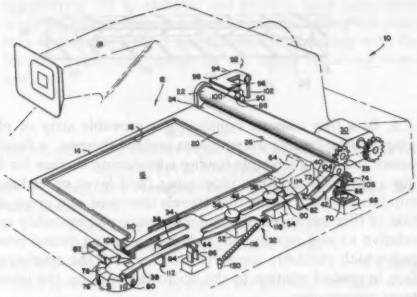
a lens arresting means connected to said gating means and said lens drive mechanism for arresting said displacement of the objective lens means at a position corresponding to said distance zone indicated by said zone signal passed by said gating means.

4,212,524

VARYING FRICTIONAL FORCES ON A FILM ADVANCING APPARATUS

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1979, Ser. No. 17,055
Int. Cl.[2] G03B *17/52, 1/08, 1/32*
U.S. Cl. 354—86 **5 Claims**



1. Photographic apparatus for advancing a film unit of the self-developing type from an exposure plane to a position between a pair of pressure-applying rollers comprising:

means for supporting a film cassette in position to locate a film unit in an exposure plane; means in position to receive a leading end of the film unit therebetween as it is being advanced from the film cassette subsequent to exposure, said rollers being constructed to rupture a container of processing liquid attached to the leading end of the exposed film unit and spread its contents across the exposed photosensitive area of the film unit to initiate the formation of a visible image therein while simultaneously withdrawing the film unit from the film cassette;

an elongate member including film engaging means slidably mounted adjacent one side of said supporting means for reciprocating movement between first and second positions;

means for mounting said elongate member for reciprocating movement;

manually operative means for moving said elongate member from said first position to said second position; and

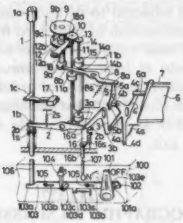
means engageable by a section of said elongate member during the initial movement of said elongate member from said first position toward said second position for substantially increasing the sliding frictional force between said mounting means and said elongate member during said movement toward said second position while simultaneously moving said film engaging means into alignment with the trailing edge of the film unit located in the exposure plane prior to moving the film unit part way out of the film cassette and into engagement with said rollers.

4,212,525

RELEASE DEVICE IN A CAMERA HAVING A MOTOR DRIVE UNIT

Fumio Urano, Omiya; Akihiro Arai, Urawa; Takumi Kobayashi; Eiji Yamamori, both of Tokyo, and Junji Umetsu, Kita, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,511
Claims priority, application Japan, May 23, 1977, 52-59582
Int. Cl.[2] G03B *1/18, 17/38*
U.S. Cl. 354—173 **3 Claims**



1. A shutter release device for a camera having a camera release actuating member movable by the camera operator to mechanically actuate said release device and a motor drive unit for actuating said release device when energized, wherein the improvement comprises:

a control member in said motor drive unit movable between a first position in which said motor drive unit is disabled and a second position in which said motor drive unit is enabled;

switch means operable by said release member during movement of said release actuating member by said operator, said switch means being positioned to be switched prior to mechanical actuation of said release device by said release actuating member and to thereby energize said motor drive unit when the latter is enabled;

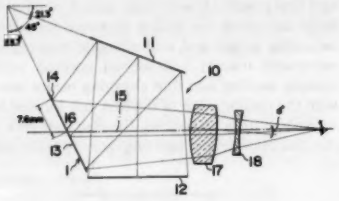
said control member in its first position permitting said release actuating member to travel a sufficient amount to mechanically actuate said release device and in its second position limiting the travel of said release actuating member to an amount sufficient to switch said switch means but insufficient to mechanically actuate said release device, whereby said release actuating member may mechanically actuate said release device and energize said motor drive unit when said control member is in its first and second positions, respectively.

4,212,526

VIEWFINDER FOR SINGLE LENS REFLEX CAMERA

Yasuo Yamazaki, Kawachinagano, and Kazuo Kimura, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 16, 1979, Ser. No. 67,199
Claims priority, application Japan, Aug. 22, 1978, 53-102537
Int. Cl.[2] G03B *13/08*
U.S. Cl. 354—225 6 Claims



1. In a viewfinder for a single lens reflex camera to provide an object image, which includes a focussing plate onto which the object image is projected, an ocular and a pentagonal roof reflecting mirror assembly for transmitting the object image on said focussing plate to said ocular, said assembly having a cavity through which the object image is transmitted including first and second roof reflecting mirrors opposite to said focussing plate and a third mirror operatively juxtapositioned relative to said first and second roof mirrors and said ocular, the improvement comprising:

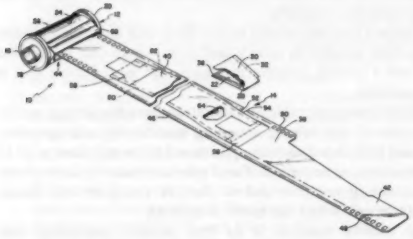
said third mirror being formed of a concave aspherical surface whose curvature is lesser at its marginal portions than at a portion adjacent to its apex, said apex being located above an intersection of said third mirror with a collimation axis of said viewfinder, and wherein said ocular is separated into at least a first convex lens group and a second concave lens group, in order from said focussing plate, at least one of said first and second lens groups being tilted to form an elevation angle with respect to said collimation axis.

4,212,527

PHOTOGRAPHIC FILM ASSEMBLAGE

Richard V. Fischer, West Warwick, R.I., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 15, 1978, Ser. No. 969,997
Int. Cl.[2] G03B *17/26*
U.S. Cl. 354—275 6 Claims



1. A photographic film assemblage for use with commercially available still picture cameras having means for operably locating a single reel cassette of film of the non-self-developing type which is adapted to have sequentially photographically recorded thereon a plurality of discrete subject images when utilized in such cameras and which has a generally cylindrical housing of a given diameter and a given length with an elongate light sealed opening extending therethrough, a spool mounted within the cylindrical housing for rotation about an axis extending lengthwise of the cylindrical housing and including a central portion around which an elongate strip of non-self-developing type film is coiled with one end thereof extending through the light sealed opening, said photographic film assemblage comprising:

a generally cylindrical housing of substantially said given diameter and said given length, said cylindrical housing including means defining a recess of a given depth in an exterior surface thereof for receiving a container of processing liquid and means defining an elongate light sealed opening extending lengthwise thereof;

support means mounted within said cylindrical housing for rotation about an axis extending lengthwise of said cylindrical housing;

an elongate composite film structure including a first sheet of unprocessed photosensitive self-developing type film having a given length sufficient to accommodate the sequential recording thereon of a plurality of discrete subject images and a second sheet secured in superposed relation to at least said given length of said first sheet, said composite film structure being coiled around said support means with a first end thereof secured to said support means and with a second end thereof extending through said elongate light sealed opening; and

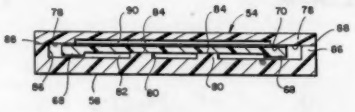
a container of processing liquid adapted to be temporarily releasably secured within said recess, said container having a depth or thickness no greater than said given depth of said recess.

4,212,528

PHOTOGRAPHIC FILM CASSETTE HAVING PRESSURE PAD AND NOZZLE ARRANGEMENT

Paul B. Mason, Magnolia, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 15, 1979, Ser. No. 12,344
Int. Cl.[2] G03B *17/50*
U.S. Cl. 354—317 6 Claims



1. In a film cassette containing a movable strip of photographic film having an emulsion surface thereon, a fluid processor including a nozzle having a doctoring surface for forming a generally uniform processing fluid layer on at least the emulsion surface as the film travels therepast in a given direction of film advancement, and a pressure pad assembly spaced relative to said nozzle and including a spring biased pressure pad which yieldably supports the film with the emulsion surface in spaced relation to the doctoring surface, the improvement comprising:

said nozzle having a pad engaging surface spaced laterally beyond each of the longitudinal margins of the film strip and constructed to engage said pressure pad as the film strip travels between said pad and said nozzle;

nozzle engaging surfaces defined by said pad for engaging said pad engaging surfaces of said nozzle so that the spacing of the emulsion surface relative to said doctoring surface is defined by said engaging surfaces; and

a film supporting member on said pad located between said nozzle engaging surfaces and being spaced from a plane defined by said nozzle engaging surfaces, said engaging surfaces and said spaced supporting member coacting with the film during travel of the film in the given direction so that thickness variations of the film will not cause said pad to substantially move towards or away from said nozzle to thereby substantially avoid altering the prese-

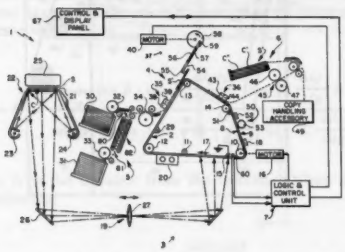
lected spacing between the emulsion surface and the doctoring surface.

4,212,529

APPARATUS FOR PRODUCING DUPLEX COPIES

Robert J. O'Brien, Rochester, and Walter A. Stryjewski, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 6, 1978, Ser. No. 959,126
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 R **9 Claims**



1. In apparatus for producing duplex copies and including a movable image receiving member for receiving first and second unfixed transferable images, copy sheet handling means comprising;

a copy sheet vacuum pick-off member located adjacent to said image receiving member, said pick-off member having a vacuum region for vacuum contacting a copy sheet;

means for mounting said pick-off member for pivotal and reciprocatory movement; and

means for moving said vacuum pick-off member in synchronism with said image-receiving member so that said vacuum region moves through a unidirectional closed loop path (a) to initially vacuum contact the other side of a copy sheet in contact with said image-receiving member and to one side of which a first unfixed image has been transferred, (b) to remove and reorient said copy sheet while said first image is unfixed, and (c) to bring the other side of said copy sheet into transfer relationship with the second transferable image on the image receiving member.

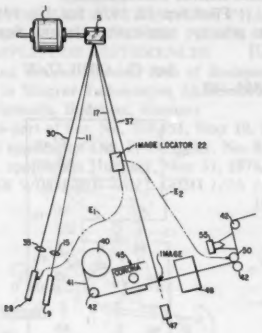
4,212,530

MEANS AND METHOD FOR PRINTING ON LIGHT SENSITIVE MATERIAL

Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,187
Int. Cl.[2] G03G *15/00*; G03B *27/32*
U.S. Cl. 355—14 R **4 Claims**

1. High speed printing apparatus for printing on light sensitive material comprising control signal means adapted to receive at least one input signal for providing a control signal in accordance with the received input signal; laser means for scanning the material and providing pulses of light which strike the material, in accordance with the control signal, to expose the material, said laser means includes a continuous laser emitting a beam of light and a pulse laser responsive to the control signal to provide the light pulses; a mirror, having a plurality of reflective surfaces, spatially related to the two lasers, to the control signal means and to the material so that the light from both lasers strike substantially the same point on a surface of the mirror; means connected to the mirror for rotating the mirror at a predetermined rate so that in effect the pulse laser repeatedly scans the material in one direction while the light beam from the continuous laser is reflected by the mirror to repeatedly scan the control signal means in a manner so that the reflected light beam scan corresponds to the scan of the material by the pulse laser; means connected to the control signal means for moving the material a predetermined distance after each scan so that unexposed material is available for



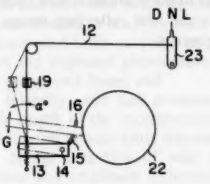
exposure; and means for developing the material so as to provide a printed copy in accordance with the received input signal.

4,212,531

APERTURE-CONTROLLING DEVICE IN A VARIABLE-SCALE PHOTOCOPYING MACHINE

Shozo Shimomura, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,366
Claims priority, application Japan, Jun. 23, 1978, 53-86280[U]
Int. Cl.[2] G03B *27/32, 27/54*
U.S. Cl. 355—55 **3 Claims**



1. In a variable-scale photocopying machine having an optical system including an optical system unit which is movable for selectively positioning on the optical axis of the optical system, in accordance with a designated photocopying scale, a corresponding lens, a photosensitive drum, and a light source for supplying light through the optical system to be projected as an exposure light beam onto the photosensitive drum, the combination therewith of an aperture-controlling device comprising an aperture-adjusting mechanism for adjusting the width of the exposure light beam, a flexible cord-like structure in tensioned state connected at one end thereof to the aperture-adjusting mechanism for actuation thereof, and a member actuated by a movement of the optical system unit to displace the cord-like structure at a point thereof substantially transversely to the longitudinal direction thereof thereby to actuate the aperture-adjusting mechanism and adjust the width of the exposure light beam in response to the movement of the optical system unit.

4,212,532

SLIT EXPOSURE TYPE COPYING APPARATUS

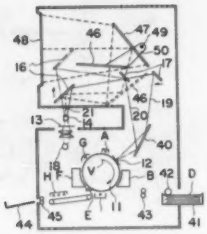
Hidenori Suzuki, Kawasaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 12, 1978, Ser. No. 941,640

Claims priority, application Japan, Sep. 20, 1977, 52-127226[U]

Int. Cl.[2] G03B *27/70*

U.S. Cl. 355—60 **8 Claims**



1. In a slit exposure type copying apparatus for obtaining copies at various magnifications of originals held in a first fixed position, the combination comprising a photosensitive member movable at a speed V past a further fixed position, means for projecting successive parts of an image of an original onto said photosensitive member and including a stationary projection lens means for projecting an image of an original at one of a plurality of magnifications during one operation of the apparatus with said photosensitive member moving at speed V and being changable for projecting an image of an original at a different magnification during another operation of the apparatus with said photosensitive member moving at speed V and a mirror means having first and second reflecting means disposed perpendicular to one another, and means for moving said mirror means to scan the successive parts of the image of the original projected by said projection lens means in a direction and having a velocity which has a velocity component V/2 perpendicular to the portions of said optical axis on which the image strikes the first reflecting means and leaves the second reflecting means.

4,212,533

PHOTOGRAPHIC EXPOSURE APPARATUS

Barthel Zeunen, 4750 Clarkston Rd., Clarkston, Mich. 48016

Filed Feb. 9, 1979, Ser. No. 10,628

Int. Cl.[2] G03B *27/20*

U.S. Cl. 355—91 **16 Claims**

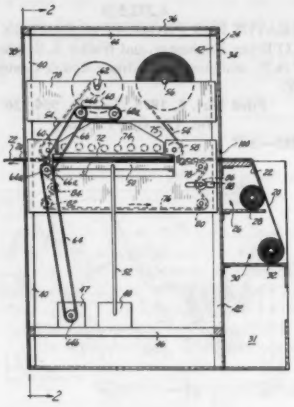
14. A transport system for a photographic exposure apparatus and for driving an original drawing and a film therethrough to expose a copy on the film, comprising:

an upper imperforate belt of transparent material;

a lower perforated belt;

said belts operable to engage the drawing and the film respectively therebetween thus holding one to the other;

a vacuum source;



said perforated belt movable into and out of operative relationship with said vacuum source for providing conjoint movement of the two belts and said film and drawing.

4,212,534

DEVICE FOR CONTACT-FREE MEASURING OF THE DISTANCE OF A SURFACE OF AN OBJECT FROM A REFERENCE PLANE

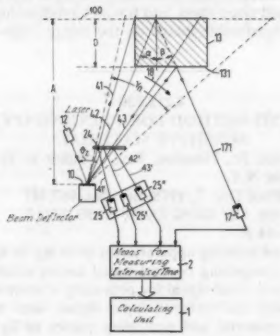
Viktor Bodlaj, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 933,070

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744130

Int. Cl.[2] G01C *3/00, 3/08*

U.S. Cl. 356—1 **10 Claims**



1. In a device for contact-free measuring of a distance D of a surface of an object from a reference plane, said surface having a diffusedly reflective property, said device comprising a light source, which produces a sharply focused light beam; a beam deflector, which serves to deflect the light beam and to repeatedly pass it over the surface; a photo detector, which, within a predetermined angle range, responds only to light which reaches it along a sighting line, said photo detector being arranged with it's sighting line being aligned to the surface of the object to be measured and to be intersected at least zone-wise by a light beam which passes over the surface;

and means for determining the distance D of the surface from the reference plane in response to a signal from the detector, the improvements comprising means for measuring intervals of time for travel of the deflected light beam between specific directions as the beam is deflected across the surface, said means for measuring providing a time difference Δt_R, which is the time of travel for the beam between a first predetermined fixed direction and a second predetermined fixed direction, a time difference Δt_{ZDA}, which is the time for the beam to move between said second direction and a third predetermined fixed direction, and a time difference Δt_d which is the time for movement between said third direction and the time at which the photo detector receives a reflected beam from the surface, and said means for determining utilizing the time differences Δt_R, Δt_{ZDA} and Δt_d as varying values to determine the distance D in accordance with

$$\text{distance } D = \frac{A \cdot \cos\beta \cdot \sin\left(B\frac{\Delta t_{ZDA}}{\Delta t_R}\left(c - C\frac{\Delta t_d}{\Delta t_R}\right)\right)}{\cos\alpha \cdot \sin\left(\alpha + \beta + B\frac{\Delta t_{ZDA}}{\Delta t_R}\left(c - C\frac{\Delta t_d}{\Delta t_R}\right)\right)}$$

wherein A is the distance from the reference plane and the beam deflector;

$$B = (\gamma_n/2) \cdot \frac{(\Delta t_{ZDA0})}{\Delta t_{R0}}$$

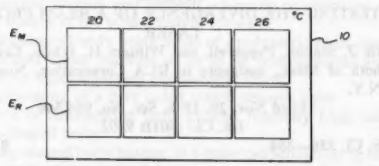
wherein Δt_{ZDA0} and Δt_{R0} are predetermined starting times and γ_n is the entire angle range for the deflected light beam; $C = 2\pi\nu_0 \cdot \Delta t_{R0}$ where ν_0 is a predeterminable starting frequency; $c = \sin(2\pi\nu_0 t_B/\Delta t_{R0})$ where $t_{B=\theta Z}/2\pi\nu_0$ and θ_Z being the angle between the light beam from the source and the second predetermined direction; α is the angle between the second predetermined direction and a normal to the reference plane; β is the angle between the sighting line and the normal of the reference plane; and τ is Ludolf coefficient which constitutes a fixed calculated value.

4,212,535

ULTRAVIOLET RADIATION DOSIMETER

Corey L. Sanders, and David M. Makow, both of Ottawa, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Aug. 29, 1978, Ser. No. 937,800
Claims priority, application Canada, Nov. 2, 1977, 290110
Int. Cl.[2] G01J 1/46
U.S. Cl. 356—51 **2 Claims**



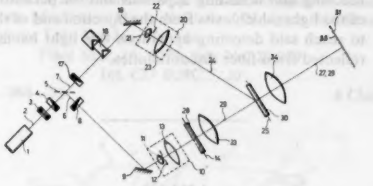
1. A device for detecting, monitoring and measuring visible and ultraviolet radiation exposures or doses comprising at least one first liquid crystal element mounted on a card or plate for positioning in the path of the radiation to be monitored and at least one second liquid crystal element mounted adjacent the first element, said first element covered with a coating layer transparent to radiation, said second element masked or covered with a coating layer impervious to all or part of the radiation and having been pre-exposed to radiation of the kind being measured to cause a color change, the amount of the radiation pre-exposure having been determined and being a measure of the amount of radiation the first liquid crystal element receives when a color change occurs which brings the two colors into a color match condition.

4,212,536

HOLOGRAPHIC SUBTRACTION WITH PHASE MODULATION TO DISTINGUISH PHASE AND AMPLITUDE DIFFERENCES

György Bencze, and András Hamori, both of Budapest, Hungary, assignors to Magyar Tudomanyos Akadémia Központi Fizikai Kutató Intezéte, Budapest, Hungary

Continuation-in-part of Ser. No. 798,451, May 19, 1977, abandoned. This application Oct. 5, 1977, Ser. No. 839,606
Claims priority, application Hungary, May 31, 1976, 2783
Int. Cl.[2] G06K 9/08; G01B 9/027; G03H 1/16, 1/28
U.S. Cl. 356—71 **10 Claims**



1. A method of detecting errors on a photomask with respect to a standard photomask by subtraction technique, which comprises the steps of:

preparing a standard hologram from said standard photomask;

passing a reference beam of coherent radiation through said standard hologram to produce a reconstructed standard beam associated with said standard photomask;

passing a part of said coherent radiation through a photomask to be inspected, located in a position corresponding to the location of said standard photomask during the preparation of the standard hologram, to produce an object beam from the inspected photomask;

passing said object beam through said standard hologram together with said reference beam for causing said reconstructed standard beam to interfere with said object beam to form a compound beam carrying information on both said standard and inspected photomasks;

detecting said compound beam; and

adjusting the intensity ratio and contiuously varying the relative path length of the reconstructed standard beam and the object beam concurrently traversing said standard photomask during detection of said compound beam whereby phase and amplitude differences can be distinguished.

4,212,537

SYSTEM FOR TESTING OPTICAL FIBERS

John E. Golob, Olathe, Kans.; Larry D. Looney; Peter B. Lyons, both of Los Alamos, N. Mex.; Melvin A. Nelson, and Terence J. Davies, both of Santa Barbara, Calif., assignors to The United States of America as represented by the Unied States Department of Energy, Washington, D.C.

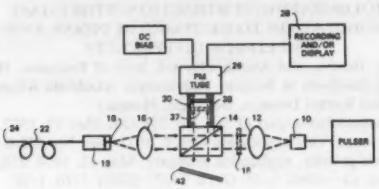
Filed Oct. 24, 1978, Ser. No. 954,381
Int. Cl.[2] G01N 21/16
U.S. Cl. 356—73.1 **16 Claims**

1. In a system for locating discontinuities within an optical fiber which includes means for generating a light probe pulse and for injecting said light probe pulse into one end of the fiber, and means for detecting reflections of said pulse incident to said injection to initiate a timing sequence and reflections caused by discontinuities along the length of said fiber, the improvement comprising:

a. means for polarizing said light probe pulse and for inject-

ing only one of the resulting polarized portions into said one end of said fiber, and

b. means for preventing a majority of the reflections of said one polarized portion incident to said injection from



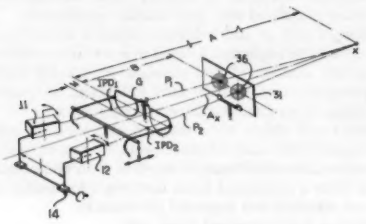
reaching said detecting apparatus and for permitting half of the light which exits from the injection end of the fiber to reach said detecting apparatus, this light having been reflected from fiber discontinuities.

4,212,538

METHOD AND APPARATUS FOR TESTING PRESCRIPTION GLASSES AND OTHER DUAL LENSES OPTICAL DEVICES

William G. Esmond, 800 Country Club Rd., Havre de Grace, Md. 21078

Filed Nov. 29, 1978, Ser. No. 964,607
Int. Cl.² G01B 9/00
U.S. Cl. 356—127 **11 Claims**



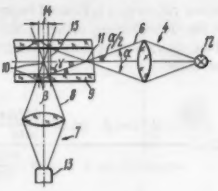
1. An apparatus for testing the alignment of a multi-beam optic device having respective left and right lenses made in accordance with a set of prescribed measurements, said apparatus comprising: at least one light source capable of directing collimated light beams along two separate paths, said paths being equally spaced on opposite sides of a central axis, said paths intersecting at a remote point lying on said central axis; supporting structure for fixably retaining an optic device to be tested in a position normal to said central axis wherein one of said light beams will pass through the left lens while the other of said light beams passes through the right lens; adjusting means for effecting relative movement between said light source and said supporting structure to align said respective light beam to pass directly through the optic axis of the respective lenses when the optic device is properly positioned; calibration means adjustably positioned normal with respect to said central axis and between said light source and said supporting structure, said calibration means having several equally spaced markings representative of measurements by which one may determine the spacing between said light beam paths and readily compare the spacing with a set of prescribed measurements for determination of proper focus for the optic device.

4,212,539

DEVICE FOR GRANULOMETRIC ANALYSIS OF PARTICLES IN FLUIDS

Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65; Evgeny S. Pervushin, ulitsa Shelkovichnaya, 182, kv. 71; Vladimir G. Kholin, ulitsa Shelkovichnaya, 184, kv. 53; Alexandr G. Fedorov, poselok Pervomaisky, 6 proezd, 21, kv. 1, and Boris M. Galishnikov, ulitsa Shelkovichnaya, 190, kv. 27, all of Saratov, U.S.S.R.

Filed Aug. 11, 1978, Ser. No. 933,026
Int. Cl.² G01N 15/02
U.S. Cl. 356—336 **2 Claims**



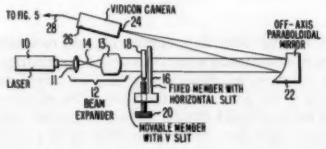
1. A device for granulometric analysis of particles contained in fluids, comprising: a flow-through chamber of an analyzer; an inlet of said flow-through chamber; an outlet of said flow-through chamber; a first window in the wall of said flow-through chamber, which is transparent to a light flux; a lighting means arranged outside said flow-through chamber, opposite said first window, and intended to direct a convergent light beam through said first window into said flow-through chamber; the solid angle α of said convergent light beam being in the range of $0 \leqq \alpha \leqq 2 \text{ Arccos } (1/n_1)$, where n_1 is the refractive index of the fluid subjected to investigation; a light-sensitive means intended to receive light reflected from particles contained in said fluid being investigated, and arranged outside said flow-through chamber; the optical axis of said light-sensitive means extending at a perpendicular to the optical axis of said lighting means and intersecting it inside said flow-through chamber, beyond the focus of said lighting means, in the direction of the light flux; a second window provided in the wall of said flow-through chamber and transparent to light reflected from particles contained in the fluid being investigated, said second window being arranged across the path of reflected light to said light-sensitive means; said second window being shaped as a cylinder whose axis is matched with the optical axis of said lighting means, said cylinder performing the function of the walls of said flow-through chamber.

4,212,540

TESTING THE DIVERGENCE OF A BEAM FROM A LASER

Vitie J. Stakun, Pepperell, and William H. White, Lexington, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,540
Int. Cl.² G01B 9/02
U.S. Cl. 356—354 **8 Claims**



1. Apparatus to test the divergence of a beam from a laser, comprising

a beam expander receptive to the light beam from a laser under test,

aperture-forming means providing an aperture in the path of the light from the beam expander,

means to image the beam from the aperture in a Fraunhofer plane,

an opto-electronic transducer positioned to translate the spatial distribution of light energy along a line in said Fraunhofer plane to an electrical signal indicating the difference between a light energy peak and a light energy valley, and

means to alter said aperture-forming means to change the aperture to two apertures which are increasingly separated,

whereby said electrical signal decreases with increasing separation of the apertures according to a function from which the divergence of the light beam from the laser under test can be calculated.

4,212,541
METHOD AND APPARATUS FOR TESTING A FORWARD-MOVING STRAND

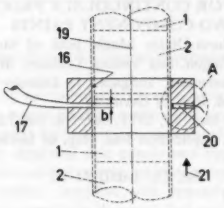
Jöel Ducommun, Chavannes, and Philippe Vulliens, Palezieux-Gare, both of Switzerland, assignors to Baumgartner Papiers S.A., Crissier, Switzerland

Filed Jun. 21, 1978, Ser. No. 917,502

Claims priority, application Switzerland, Jun. 21, 1977, 7627/77

Int. Cl.² G01D *21/04*

U.S. Cl. 356—430 **8 Claims**



1. Apparatus for testing a continuously forward-moving strand, such as a cigarette filter strand, in which portions having different optical characteristics follow each other sequentially, said apparatus comprising:

an optical testing station located along the longitudinal path of said forward-moving strand;

means including a ring-shaped body at said station, tightly encircling and confining said filter strand so as to guide the strand steadily and without whipping or vibration at said station as the strand moves forward;

said ring-shaped body being made of a polymeric resin manufactured under vacuum so as to be homogeneous and have no light-reflecting microscopic voids;

said resin being of a dark color which absorbs light;

a source of illuminating light located remotely from said ring-shaped body;

said ring-shaped body having, in a plane perpendicular to the longitudinal axis of said forward-moving strand, a radial bore;

optical fiber light conduction means guiding light from said source of illuminating light and through said radial bore to the surface of said forward-moving strand;

a cavity in said ring-shaped body located in the same plane, perpendicular to the longitudinal axis, as said radial bore, said cavity having an opening, in said plane, on the interior bore of said ring-shaped body;

photoelectric sensing means located in said cavity and responsive to light entering said cavity through said hole;

said photoelectric sensing means being located immediately adjacent said hole and being optically very tightly coupled to the light entering said hole;

said radial bore and said opening being so located, in said plane perpendicular to the longitudinal axis, that illuminating light from the optical fiber light conducting means in said radial bore beams and diffuses through said forward-moving strand to said opening;

whereby said photoelectric sensing means responds only to light which has traversed through said forward moving-strand; and

whereby the amount of light which reaches said photoelectric sensing means, from said remote source of illumination, as modulated by said forward-moving strand, is sufficient to produce an ample response

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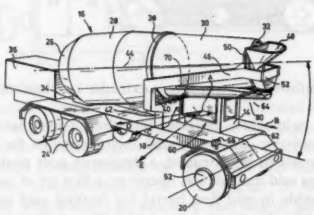
4,212,542
FRONT END LOADING TRANSIT MIXER

Gerald Beekenkamp, Mississauga, Canada, assignor to London Concrete Machinery Co. a division of Hodgson Machine & Equipment Ltd., London, Canada

Filed Mar. 14, 1979, Ser. No. 20,259

Int. Cl.² B28C *5/20*

U.S. Cl. 366—54 **4 Claims**



1. A front end loading transit mixer for use in transporting and mixing concrete and the like comprising;

(a) a frame comprising longitudinally elongated main beam means extending in a first generally horizontal plane, said beam means having a front end portion and a back end portion and a longitudinal axis extending therebetween, said front end portion having first and second sides disposed one on either side of said longitudinal axis, front and back road going wheel sets supporting said frame at the front and back portions thereof, respectively, the wheels of each wheel set having an axis of rotation disposed below said first horizontal plane,

(b) a longitudinally elongated mixing drum having; a front end and a back end, a mixing chamber formed within said drum, an opening at the front end of said mixing drum through which concrete may be loaded into or discharged from said mixing chamber, an axis of rotation extending longitudinally between said front and back ends, a front section of said mixing drum having a longitudinally elongated truncated conical shape extending rearwardly from and increasing uniformly in diameter in a direction rearwardly from said front end, said front section having a length which is at least half of the total length of the mixing drum,

(c) mounting means on said frame supporting said mixing drum above said first plane for rotation about said axis of rotation with its back end disposed above said back end portion of said frame and its front end portion disposed above said front end portion of said frame, and said axis of rotation being inclined upwardly in a direction toward the front end portion of said frame in a first inclined plane such that the front end of the mixing drum is spaced a substantial distance above the front end portion of the frame whereby a substantially unobstructed viewing opening is provided in the area extending inwardly from the front end of the frame and located above the front end portion of the frame and below the front section of the mixing drum,

(d) an operator cab having an operator station therein, said cab being mounted on the front end portion of said frame so as to locate the operator station rearwardly from the front wheel set and laterally offset on the first side of said longitudinal axis, said cab being adapted to afford said operator, when in said operator station, a substantially unobstructed line of vision toward said second side of said frame in a generally horizontal plane extending through said viewing passage over an angle of at least 90° from the direction of forward movement of the road going wheeled frame as viewed from the operator station.

4,212,543

TWIN-SCREW, TWO-STAGE AND MULTI-STAGE EXTRUDER HAVING A DOUBLE FEED

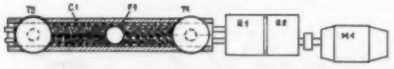
Terenzio Bersano, Via Liruti, 12, 33100 Udine, Italy

Filed Aug. 4, 1978, Ser. No. 931,194

Claims priority, application Italy, Aug. 5, 1977, 83450 A/77

Int. Cl.³ B01F *7/00*

U.S. Cl. 366—85 **5 Claims**



1. A multi-stage, twin-screw extruder mechanism, comprising

a first twin-screw extruder including a first barrel having therein two axially spaced inlet openings for receiving materials to be extruded, a discharge port positioned between said spaced inlet openings, a first set of twin-screws rotatable in said first barrel for feeding said materials in opposite directions from said inlet openings to said discharge port,

a second twin-screw extruder including a second barrel extending transversely of said first barrel, said second barrel having an inlet port registering with the discharge port of said first barrel,

means coupling the discharge port of said first barrel to the inlet port of said second barrel to convey said materials from said discharge port to said inlet port,

a second set of twin screws rotatable in said second barrel to draw said materials received from the discharge port of said first barrel, and to feed said materials in one direction and through an extrusion head at one end of said second barrel, and

means for driving said first and second sets of twin screws at variable speeds,

said coupling means including adjustable means cooperating with said driving means to cause said materials to be maintained under the desired pressure and temperature conditions as they pass from said first to said second barrel.

4,212,544

ORIFICE PLATE MIXER AND METHOD OF USE

Michael J. Crosby, 1, Thornton Rd., Hensingham, Cumbria, England

Division of Ser. No. 686,432, May 14, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,095

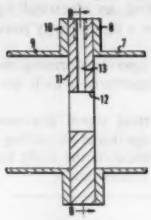
Claims priority, application United Kingdom, May 15, 1975, 20568/75

Int. Cl.² B01F *5/10*

U.S. Cl. 366—150 **13 Claims**

1. A method of mixing a first fluid and a second fluid in a turbulent flow plate mixer which is in the form of an integral, one-piece, thin plate having an axially directed, substantially round orifice therethrough, the method comprising:

passing a first fluid into said orifice via a conduit means which has a cross-sectional size larger than said orifice so that said orifice acts as a sudden constriction to the first fluid supplied ·' erethrough said conduit means, said conduit means being attached to said thin plate at at least one end of the orifice, the orifice having an internal wall extending through the plate and the thickness of the plate (corresponding substantially to the axial length of said orifice) being small relative to the diameter of said orifice;



passing said second fluid through at least one, but no more than four, ports in said thin plate, said ports opening at said internal wall of said orifice and substantially radially extending through said plate substantially perpendicularly to said orifice from the outside edge of said plate to said internal wall, whereby said first and second fluids are mixed.

4,212,545

METHOD FOR CONTINUOUSLY PROCESSING TWO-COMPONENT PAINTS

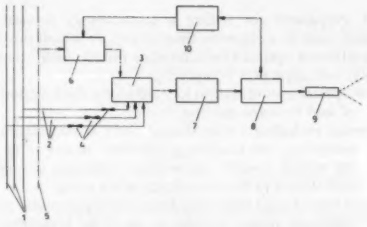
Csaba Lovasz; Horst-Dieter Maab, both of Stuttgart; Horst Schene, Sindelfingen, and Volker Teubner, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,728

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659273

Int. Cl.² G05D *11/02*

U.S. Cl. 366—152 **7 Claims**



1. A method for processing two-component varnishes of different color shades, said two-component varnishes containing a basic varnish liquid component and a hardener or cross-linking agent liquid component, said method comprising:

(a) withdrawing at least one colored basic varnish liquid component from at least one of a plurality of ring conduits carrying different-colored basic varnishes;

(b) feeding said basic varnish component to a colored-changing block;

(c) withdrawing, through controllable measuring means, a colorless hardener or cross-linking agent liquid component from another ring conduit in a predetermined and previously adjusted mixing ratio with respect to said basic varnish component, said ratio being set by said controllable metering means and maintained by controlling the feed quantity of at least one of said components;

(d) feeding said hardener or cross-linking agent component to said color-changing block wherein the basic varnish

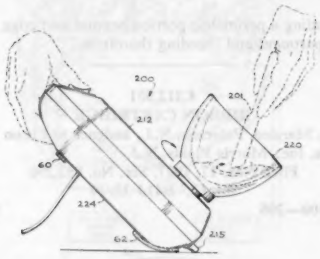
component and the hardener or cross-linking agent component are initially admixed;
(e) thoroughly mixing said components;
(f) measuring the dielectric constant of said thoroughly mixed components to generate a signal which is a function of the mixing ratio; and
(g) using said signal to control said metering means to maintain the predetermined mixing ratio.

4,212,546

TILTABLE POWER BLENDER FOR DENTAL IMPRESSION MATERIALS

Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024

Filed Sep. 21, 1978, Ser. No. 944,554
Int. Cl.[2] A61C *5/06*
U.S. Cl. 366—213 **8 Claims**



1. A blending device for dental impression materials comprising:
a substantially rectangular enclosure which includes upper and lower housing halves interlocked along a beltline, said upper housing half having an upper surface conjoint with oppositely disposed side panels and oppositely disposed first and second end panels, said lower housing half having a lower surface conjoint with oppositely disposed side panels and oppositely disposed first and second end panels;
drive means disposed within said enclosure, said drive means including an electric drive motor coupled to a rotational drive shaft through a speed reducing geartrain, said driveshaft passing trough, and in substantially orthogonal alignment with, the upper surface of said upper housing half;
a turntable mounted on said driveshaft, said turntable being disposed above and spaced from said upper surface;
a bowl member removably engaged upon said turntable;
control means for said drive means;
handle means integral with said first end panel of said lower housing half; and
support means, including elastomeric support strips, affixed to the lower surface of the lower housing half of said enclosure.

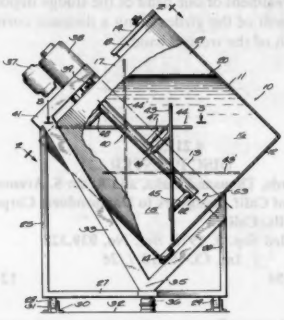
4,212,547

APPARATUS FOR BLENDING FLUID AND SOFT PARTICULATE FOOD CONSTITUENTS

Meredith C. Thomson, Sheboygan, Wis., assignor to Stoelting, Inc., Kiel, Wis.

Filed Mar. 19, 1979, Ser. No. 21,514
Int. Cl.[2] B01F *7/08, 7/04*
U.S. Cl. 366—325 **16 Claims**

1. Blender apparatus for blending fluid and soft particulate food constituents, said blender comprising:
a wall defining a hollow cylinder and means for closing the bottom end of said cylinder to form a container for said fluid and particulate constituents,
means for supporting said cylinder with its axis at an angle in the range between 30° to 60° with respect to horizontal whereby half of said cylinder will be above and the other half will be below said axis,
a rotatable shaft projecting into said container toward its bottom, the axis of said shaft being in substantial parallelism with the axis of the cylinder,
first and second blade means mounted to said shaft and projecting radially away from said shaft for orbiting about said shaft axis, said blade means being angulated in the same direction and being axially spaced apart and located on generally opposite sides of the shaft axis and being



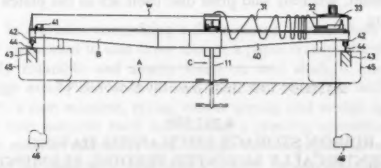
disposed in planes, respectively, which intersect said shaft axis at angles other than right angles, the angles of said oppositely located blades relative to said shaft axis being such that during rotation of said shaft said blades will oscillate, respectively, from the nearest to horizontal altitude which they can attain on one side of said axis to the nearest to vertical altitude which they can attain on the other side of said axis such that when one blade is nearest to horizontal the other blade will simultaneously be nearest to vertical, said first blade means being nearer to the bottom of said container than second blade means.

4,212,548

APPARATUS AND METHOD FOR TREATING SLUDGE DEPOSITS

Masao Miyaguchi; Tateo Kawamura, both of Tokyo; Kazuyoshi Nakanishi, Yokohamashi, and Shoji Kohno, Chiba, all of Japan, assignors to Takenaka Komuten Company, Limited, Osaka, Japan

Division of Ser. No. 856,788, Dec. 2, 1977. This application Apr. 9, 1979, Ser. No. 28,560
Int. Cl.[2] B01F *7/18, 15/02*
U.S. Cl. 366—348 **3 Claims**



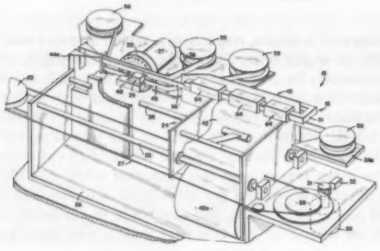
1. A method for treating sludge deposits by using a sludge deposit treating apparatus comprising a longitudinal girder including first running means for moving the girder in a direction perpendicular to the longitudinal direction of said girder, second running means for moving kneading means in the longitudinal direction of said girder, lift means moving a kneading zone of said kneading means in the vertical direction, and chemical supply means for supplying a chemical to the kneading zone of said kneading means, said method comprising: placing the girder of the sludge deposit treating apparatus

movably on a sludge deposit layer, feeding the chemical to the kneading zone while moving the kneading zone of said kneading means in said longitudinal direction, moving the kneading means in said longitudinal direction of the girder while continuing said vertical movement of the kneading zone of said kneading means, thus treating one band of the sludge deposit layer while mixing and kneading the sludge deposit with the chemical, moving the girder in a direction perpendicular to said longitudinal direction along a distance corresponding to the width of the treated band of the sludge deposit layer, and repeating the treatment of one band of the sludge deposit layer and the movement of the girder along a distance corresponding to the width of the treated band.

4,212,549
DISC PRINTER

Albert L. Edwards, Thousand Oaks, and Aram S. Arzoumanian, Encino, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed Sep. 5, 1978, Ser. No. 939,328
Int. Cl.[2] B41J *1/26*
U.S. Cl. 400—154 **12 Claims**



1. A print disc for use in a printing apparatus, said print disc having a flat front face, said apparatus having a stationarily mounted hammer and a rotational mounting means for rotating said print disc at a substantially constant rate while maintaining said print disc at a stationary location with said flat front face opposite said hammer, and means for linearly moving a medium onto which characters are to be printed between said front face and said hammer, said print disc having at least one set of raised type fonts integrally formed on the flat front face thereof and arranged in a spiral, characterized in that said print disc is sufficiently rigid so as to enable said disc to sustain the impact of printing by said hammer without axial distortion or movement, whereby said print disc itself act as the platen for printing.

4,212,550
RIBBON STORAGE MECHANISM HAVING ECCENTRICALLY MOUNTED FEEDING ELEMENTS

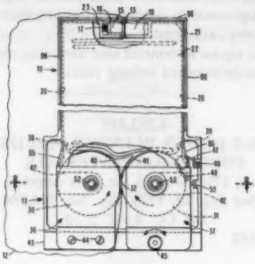
Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,462
Int. Cl.[2] B41J *33/10*
U.S. Cl. 400—196.1 **15 Claims**

1. Apparatus for packing a web into a storage compartment comprising:

at least one stripping means having a stripping edge adjacent said compartment;

feed means for gripping said web and moving said web into said compartment, said feed means including at least one member movable with respect to said edge and alternately

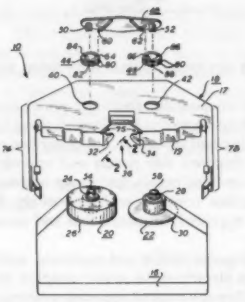


extending a perimetric portion beyond said edge into said compartment and receding therefrom.

4,212,551
RIBBON CARTRIDGE

Joseph A. Marsico, Paterson, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.

Filed Nov. 17, 1977, Ser. No. 852,298
Int. Cl.[2] B41J *33/14*
U.S. Cl. 400—208 **5 Claims**



1. In a ribbon cartridge for insertion into a printing machine having a printer, a spool drive means, and a platen wherein the cartridge comprises:

a cassette;

an inked ribbon in said cassette for extending between said printer and platen;

movable means in said cassette for storing said ribbon connected thereto, said movable means comprising spools, each of said spools having a spindle and a flange at one end of said spindle;

means attached to each of said flanges for rotatably engaging said spools with said spool drive means;

fastening means connected to each of said spindles for fastening said spools to said cassette;

locking means detachably mounted on said cassette for locking said spools in a preselected position in said cassette along a given direction of movement of said ribbon from one of said spools toward said printer and platen for engagement of said means for rotatably engaging said spools with said spool drive means;

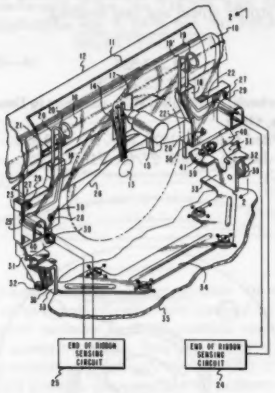
said locking means comprising at least two ridges, each of said ridges engaging one of said fastening means and locking one of said spools in said preselected position;

whereby said spools are locked so that said spool drive means may be engaged by said means for rotatably engaging said spools with said spool drive means.

4,212,552
IMPACT PRINTER CARDHOLDER WITH INTEGRAL RIBBON GUIDE AND END OF RIBBON SENSOR

John D. Bemis, Charlotte, N.C., and Willie Goff, Jr., Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,276
Int. Cl.[2] B41J *35/36*
U.S. Cl. 400—249 3 Claims



1. In an impact printer having a curved platen and a cardholder with an inner surface having a curvature corresponding to the curvature of said platen mounted adjacent to but spaced from said platen so that a sheet of a printing medium may be moved between said cardholder and platen, said cardholder having an opening therein through which said sheet may be printed upon by impact means, the improvement wherein said cardholder comprises

integral ribbon guide means for guiding a printer ribbon in a path spaced along the outer surface of said cardholder across said opening whereby said impact means may selectively drive said ribbon through said opening to print upon said sheet,

said ribbon guide means including two pairs of electrically conductive members respectively fixed to said cardholder on opposite sides of said opening,

and circuit means connected to said pairs of conductive members for detecting when a conductive element in an end of said ribbon contacts both conductive members of one of said pairs to provide a conductive path between said members, whereby conductive elements at opposite ends of a printer ribbon may be sensed dependent on the direction of movement of said ribbon.

4,212,553
TABULATION CONTROL SYSTEM HAVING TWO ELECTRONIC TAB RACKS

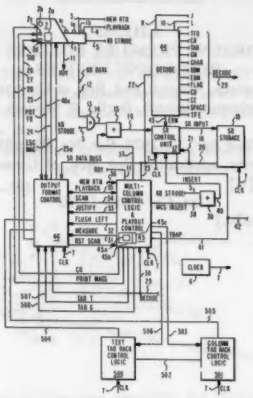
Robert G. Acosta; Michael E. McBride, both of Austin, and Robert A. Pascoe, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1978, Ser. No. 884,082
Int. Cl.[2] B41J *25/18*
U.S. Cl. 400—279 10 Claims

1. A tabulation system for controlling printout of corresponding lines of sequentially stored columns during playout to form a side-by-side format, said system comprising:

(a) a first tab storage means for storing tab locations defined before the beginning of the first of said columns to control text positioning during playout;

(b) a second tab storage means for storing a copy of said tab locations stored in said first tab storage means to control column positioning during playout of said columns; and

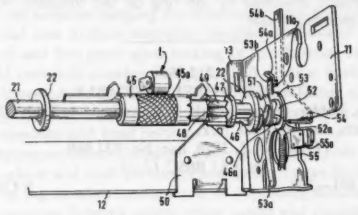


(c) means for causing said copy to be stored in said second tab storage means when said beginning of said first column is reached during playout.

4,212,554
PAPER-FEEDING APPARATUS FOR A PRINTER

Helmut Gelling, Wangen, Switzerland, assignor to Firma Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland

Filed Feb. 2, 1978, Ser. No. 874,564
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1977, 2706161
Int. Cl.[2] B41J *19/76*
U.S. Cl. 400—550 3 Claims



1. In a printer comprising a drive motor, a main shaft rotatably connected to said drive motor, a paper transport cylinder freely rotatable and axially fixed on said shaft, a coupling wedge axially movable on said shaft and rotatable with said shaft, a cam member, spring means urging said wedge against said cam member such that during a printing operation said cam member displaces said wedge into engagement with a recess in said paper transport cylinder to automatically advance paper by one line each time a line has been printed, the improvement wherein:

a control disk is mounted for movement in the axial direction of said shaft;

said wedge including a projection engageable with said control disk;

a key mounted for manual actuation, said key including a portion for displacing said control disk axially to displace said wedge axially into engagement with said recess in said paper transport cylinder, said key being operable, when actuated, to activate said motor to rotate said shaft

and thereby rotate said paper transport cylinder by means of the wedge which drivingly couples said shaft to said transport cylinder.

4,212,555

INK ABSORBENT PRESSURE ROLLERS FOR INK RECORDING DEVICES

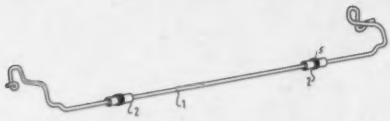
Guenter Rosenstock, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 895,958

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 7712267[U]

Int. Cl.² B41J *13/02*

U.S. Cl. 400—639.1 **5 Claims**



1. In a liquid jet ink recording apparatus utilizing a data carrier advanced past a platen with a hinged biased clamp member carried by the apparatus equipped with pressure rollers for biasing the data carrier against the platen downstream of a recording position, the improvement of anti-smear means including at least the part of the pressure rollers contacting the data carrier being constructed of an absorbent material, the absorbent material being capable of absorbing liquid recording ink from the surface of the data carrier to minimize smear, the pressure rollers rotatably affixed to the clamp member and having a total length less than a width of the data carrier, the pressure rollers including a body rotatably mounted on the clamp member, the body carrying a movable ring of ink absorbent material having an outer diameter greater than an outer diameter of the body and of the clamp member whereby liquid ink on the data carrier not absorbed by the data carrier at a contact position in contact with the pressure rollers will be at least partially absorbed by the ring on the rotatable bodies thereby reducing smear.

4,212,556

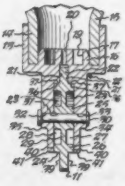
STRIPER WHEEL ASSEMBLY

Henry A. Kohler, Orchard Park, N.Y., assignor to Truly Magic Products, Inc., Buffalo, N.Y.

Filed Jul. 5, 1978, Ser. No. 921,949

Int. Cl.² B05C *17/02*

U.S. Cl. 401—208 **9 Claims**



1. A striper device comprising a striper wheel having an outer periphery and an outer circumferential portion of a first thickness and a hub portion of a second thickness which is greater than said first thickness, a wheel housing, means for mounting said striper wheel for rotation on said wheel housing, means in said wheel housing for conducting liquid to said outer periphery, said wheel housing including first spaced housing portions spaced apart substantially the same amount as said first thickness for receiving a segment of said outer circumferential portion, and second spaced housing portions spaced apart substantially the same amount as said second thickness for receiving a segment of said hub portion, whereby said first and second spaced housing portions in conjunction with said segments of said outer circumferential portion and said hub portion, respectively, function as a seal to prevent leakage, said hub portion having a convex surface of a first radius, and said housing having a concave surface of a second radius of substantially the same size as said first radius whereby said hub portion and said housing include substantially touching cylindrical surfaces for providing additional sealing engagement between said striper wheel and said housing.

4,212,557

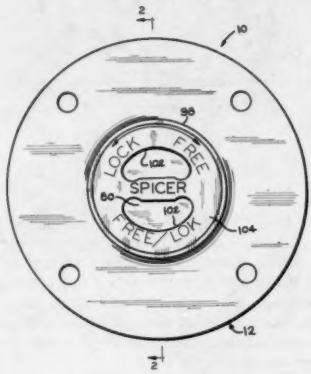
HUB CLUTCH

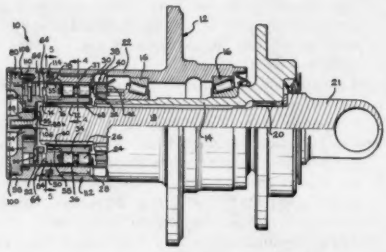
Robert B. Overbeek, Janesville, Wis., assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 12, 1978, Ser. No. 950,931

Int. Cl.² B60B *27/00*; F16D *1/06*

U.S. Cl. 403—1 **4 Claims**





1. A clutch for a four-wheel drive vehicle for drivingly connecting a shaft rotatable about an axis and a wheel hub, said clutch comprising:

(a) an axially fixed clutch member connected to the shaft,

(b) an axially movable clutch member slidably connected to the wheel hub and selectively engageable with said fixed clutch member,

(c) a rotatable selector supported by the wheel hub, said selector including a hub having an annular exterior surface,

(d) a follower connected to said movable clutch member,

(e) a rotatable cam ring having a cam slot engaged with said follower, said cam ring having an annular interior surface concentrically disposed about said selector hub exterior surface, said surfaces spaced apart and defining an annular chamber therebetween, and

(f) a coiled torsion spring for connecting said rotatable selector and said cam ring, said coiled torsion spring disposed in said annular chamber having first and second ends, said first end connected to said rotatable selector and said second end connected to said cam ring.

4,212,558

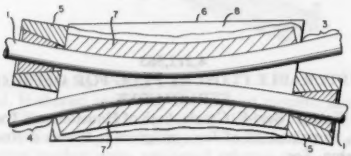
COUPLER FOR CABLES TENSIONED ONE END AGAINST ANOTHER END

Frederic A. Lang, Good Hope Rd., Landenberg, Pa. 19350

Continuation-in-part of Ser. No. 714,350, Aug. 16, 1976. This application Sep. 5, 1978, Ser. No. 939,491

Int. Cl.² F16B 2/14

U.S. Cl. 403—41 **5 Claims**



1. A self-equillibrating coupler suitable for simutaneously tensioning of two ends of cable, said coupler having two uniformly curved surfaces in fixed position one to the other throughout a single passage, said two uniformly curved surfaces being continously curved longitudinally throughout the length of said passage, the two curved surfaces curving from each other in an amount sufficient to permit jacking and anchoring of both cable ends outside of the coupler, the two curved surfaces being separated radially at the coupler geometric center, in an amount at least as great as twice the diameter of the cable, and the tangents of the longitudinally curved surfaces at the entering point of each cable that are in the plane of the axis of the two cables being separated perpendicularly in an amount equal to one cable diameter, hence permitting the cables to share a common center line at their point of entry into the coupler.

4,212,559

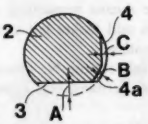
MEANS FOR CONNECTING A MALE PART WITH A FEMALE PART

Anders E. Persson, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jun. 7, 1978, Ser. No. 913,540

Int. Cl.² F16B 3/04

U.S. Cl. 403—348 **11 Claims**



1. In an apparatus for connecting a male part to a female part of the type wherein the female part comprises a hole and a bore extending eccentrically across the hole, a locking pin disposed in the bore and spaced from a portion of the bore adjacent the hole to form a space, said male part comprising a shank, said shank including a groove for engagement with said locking pin, the periphery of said shank including a beveled portion of sufficient depth to allow a lower portion of the shank to pass the locking pin during insertion of said shank into said hole, said groove being disposed in such lower portion of said shank and arranged to receive said locking pin in response to rotation of said shank to prevent withdrawal of said shank, the improvement wherein said groove includes means for bending said pin into said space in a direction away from the axis of said hole during rotation of said shank, to resist reverse rotation of said shank.

4,212,560

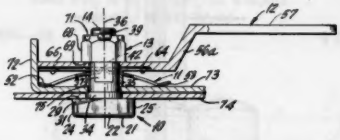
QUARTER TURN INDUSTRIAL FASTENER

Frederick J. Pufpaff, Loudonville, and Cuyler Hoen, Rensselaer, both of N.Y., assignors to Simmons Fastener Corporation, Albany, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,015

Int. Cl.² B25G 3/00

U.S. Cl. 403—353 **15 Claims**



1. An industrial fastener assembly for removably locking together two plates by a one-quarter turn of the fastener, including

a first place having an opening therethrough having an elongated direction and a shortened direction at substantially a right angle thereto;

a second plate having a hole therethrough which is adapted to align with the hole of the first plate upon locking together the two plates;

a cam bolt member having a head portion, said head portion having a top face, a bottom face, elongated opposite sides in its length direction which are parallel to each other and to the bolt axis, and relatively shortened opposite sides in its width direction at a right angle to said elongated sides so that said head portion fits through the hole in said first plate, at least a portion of the diagonally opposite end corners of said bottom face being removed to form two cam surfaces merging the adjacent bottom and side faces, said cam surfaces engaging marginal portions of the hole of said first plate upon locking of said fastener assembly;

said cam bolt member having a shaft portion having at an intermediate position a pair of flattened sides, said shaft portion having external screw threads proximate to its end opposite said head portion;

a spring member of resilient material having a hole through which said shaft protrudes and freely rotates therein, said spring member having a pair of oppositely directed raised portions forming detent ridge means and extending substantially outwardly from said hole along an imaginary bisector of said hole;

a turning means having external means to permit the turning means to be rotated, a hole through said turning means having flattened internal side walls to meet said flattened sides of said cam bolt shaft so that turning of said turning means will turn said cam bolt member, said turning means being slidable on said cam bolt shaft, said turning means having a body portion in a plane vertical to the axis of said cam bolt and having an upper and a lower face, and four indentations in said lower face at a substantially equidistant spacing, said indentations being outwardly directed along imaginary extended radii of said turning means hole, said raised portion of said spring removably detenting two oppositely directed indentations; and

a nut member having internal screw threads which are screwed onto said screw threads of said cam bolt member;

said spring member exerting pressure between said turning means and said second plate.

4,212,561

MARINE STRUCTURE CONNECTING STRUCTURES AT DIFFERENT LEVELS

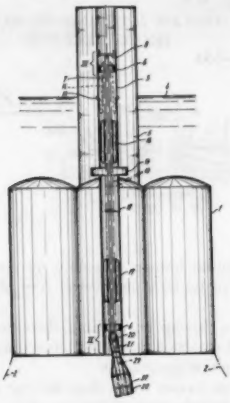
Johannes Wipkink, Sassenheim, Netherlands, assignor to Ingenieursbureau Marcon (Marine Consultants) B.V., Leiden, Netherlands

Filed Jun. 16, 1978, Ser. No. 916,427

Claims priority, application Netherlands, Jun. 17, 1977, 7706724

Int. Cl.[2] E21B 7/12

U.S. Cl. 405—195 12 Claims



1. A marine structure for guiding ducts from a deeper to a higher device below water, which devices are adapted to make mutual movements characterized in that said marine structure comprises a rigid column having pivot means both at its upper and at its lower end to give a pivoting connection with the deeper and higher devices respectively, a plurality of said ducts rigidly connected to said column, a plurality of higher ducts therefor having pivoting connections to corresponding ones of said first-mentioned ducts, and guide structure for guiding said plurality of higher ducts for longitudinal movement with respect to said higher device.

4,212,562

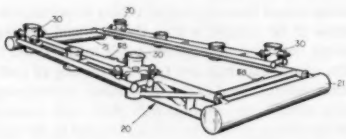
METHOD AND APPARATUS FOR LEVELING TEMPLATES FOR OFFSHORE SUBTERRANEAN WELLS

William B. Stone, Houston, Tex., and Marvin L. Holbert, Jr., Gretna, La., assignors to Lynes, Inc., Houston, Tex.

Filed Jul. 31, 1978, Ser. No. 929,389

Int. Cl.[2] E02D 21/00, 27/04

U.S. Cl. 405—195 14 Claims



1. Apparatus for leveling a template for use in the drilling, completion or workover of a deep water, subterranean well on a plurality of horizontally spaced hollow piles secured in a vertical position in the ocean floor, comprising: a plurality of vertically disposed sleeves secured to the template at horizontal locations corresponding to said piles, said sleeves having an internal diameter exceeding said piles, permitting each sleeve to be respectively freely passed downwardly over the top ends of said piles; (the top ends of said piles respectively having vertically corrugated surfaces respectively surrounded by said sleeves;) at least one radially shiftable clamp mounted on each said sleeve, said clamp having its inner face engagable with (said vertically corrugated) the adjacent surface portion of the respective pile to lock each said sleeve to the respective pile in any selected one of a plurality of vertical positions; means removably insertable in the top end of each pile and detachably connected to the respective sleeve for raising each said sleeve relative to the enclosed pile to achieve a horizontally level position of the template; and hydraulically activated operating means for radially shifting each said clamp inwardly to lock the respective sleeve in the pre-selected vertical position on its co-operating pile required to level the template.

4,212,563

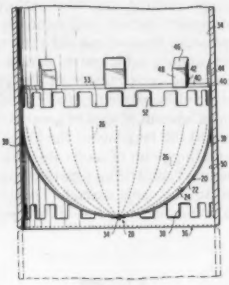
RUPTURABLE CLOSURE PLUG FOR OFFSHORE STRUCTURES

Jay B. Weidler; Bert E. Gracia, both of Houston, and Tommy L. Hull, Sugarland, all of Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Dec. 29, 1978, Ser. No. 974,427

Int. Cl.[2] E02B 17/00

U.S. Cl. 405—195 13 Claims



1. An offshore structure comprising:

jacket means including

buoyant compartment means defined by jacket leg means;

rupturable closure means defining lower end means of said buoyant compartment means,

said rupturable closure means being operable to be ruptured by pile means impacting on upper side means thereof, when said jacket leg means are in a generally upright orientation;

the improvement in said rupturable closure means comprising:

cup-like cap means defining said rupturable closure means and having

convex under side means, and

concave upper side means;

a plurality of circumferentially spaced, generally radially extending weakened zones in said cap means operable to define generally radially extending rupture zones when said cap means is impacted on said concave upper side by pile means; and

said cup-like cap means, when impacted by said pile means, rupturing along said generally radially extending weakened zones to define a plurality of generally triangular cap segments,

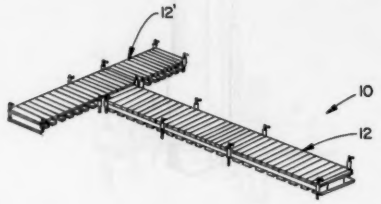
with said generally triangular cap segments being pressed generally radially outwardly of the central axis of said leg means toward the inner periphery of said jacket leg means by said impacting pile means.

4,212,564

DOCK

Charles Kay, 9390 Whitneyville Ave., Alto, Mich. 49302

Filed Oct. 26, 1978, Ser. No. 955,121
Int. Cl.[2] E02B 3/20
U.S. Cl. 405—218 3 Claims



1. A dock structure comprising:

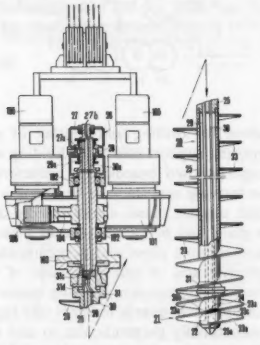
spaced, H-shaped anchoring and support mounts, and elongated deck modules supported thereon; each of said mounts including deck support structure and a pair of vertical anchor posts rotational relative to said support structure and having a helical blade to cause said posts to be earth-embedded when rotated; the vertical legs of the H including said posts and including post-receiving and deck-supporting sleeves, and the cross leg of the H interconnects said sleeves; and means for fastening said deck modules to said support structure of said mounts, said deck modules each having an upper compression layer and a lower tension layer spaced therebeneath, flanged stringer plates interconnecting said layers with the flanges thereof embedded in said layers; and said layers having a plurality of transversely extending elements and said stringers being normal thereto.

4,212,565

METHOD AND APPARATUS FOR FORMING A CONTINUOUS ROW OF CAST-IN-PLACE PILES TO FORM A WALL

Keiichi Watabe, Matsudo, Japan, assignor to The Shimizu Construction Co., Ltd., Japan

Filed Aug. 24, 1978, Ser. No. 936,488
Claims priority, application Japan, Apr. 17, 1978, 53-45106
Int. Cl.[2] E02D 5/34
U.S. Cl. 405—269 5 Claims



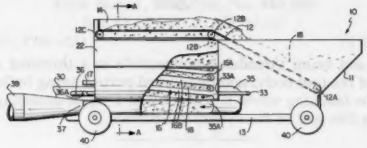
1. An earth auger device comprising an auger head and a hollow auger shaft rotatably connected to a driving unit, with a water swivel means connected to the upper end of the auger shaft, said auger shaft including a low-pressure mortar pipe line and a high-pressure mortar pipe line disposed therein, said lines extending through the hollow auger shaft into said auger head, said low-pressure line being connected to a pouring port in said auger head for pouring mortar into an excavated hole to form an intermediate pile, said high-pressure line being connected to jet nozzles mounted in said auger head for injecting mortar toward previously-formed piles to displace earth and to form walls connecting said intermediate pile with said previously-formed piles.

4,212,566

ROTARY FEEDER FOR SOLID PARTICLE INJECTION INTO PRESSURIZED FLUID SYSTEM

David T. Kao, and Don J. Wood, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Feb. 8, 1978, Ser. No. 876,165
Int. Cl.[2] B65G 53/46
U.S. Cl. 406—68 9 Claims



1. An apparatus for injecting particles into a pressurized fluid system comprising:

a conduit including a flow of pressurized fluid therein for transporting particles and a venturi section which extends along a portion of the conduit from an upstream end to a downstream end;

said venturi section of said conduit including an opening through which particles are injected into said pressurized fluid;

a feeder roller including a plurality of inclined troughs positioned at an angle with respect to an axis of said feeder roller;

said inclined troughs extending along said feeder roller from a lower upstream end to a higher downstream end with respect to said flow of pressurized fluid within said conduit;

a flushing conduit with one end thereof in communication with said flow of pressurized fluid at a point upstream of said venturi section, said flushing conduit including a discharge end being intermittently connected to said inclined troughs at the lower upstream end thereof; and

said flow of pressurized fluid within said conduit and the flow of pressurized fluid within said flushing conduit being in the same direction and effecting an injecting of particles positioned within said inclined troughs through said opening and into said venturi section of said conduit.

4,212,567

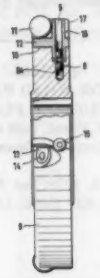
MOUNTING ELEMENT FOR A REVERSIBLE TOOL TIP OR THE LIKE

Günter Wermeister, Ratingen, Fed. Rep. of Germany, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 17, 1978, Ser. No. 952,082
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746958
Int. Cl.[2] B26D 1/12
U.S. Cl. 407—46 5 Claims

1. A mounting element for use on a rotary tool body for supporting a reversible cutting tip thereon, said supporting element comprising a cylindrical portion and an arm portion formed integrally of one piece, said cylindrical portion being configured for insertion radially into the tool body so that its cylindrical outer surface is arranged to abut an outer wall of the cutting tip to form an axial support therefor, said arm portion projecting at substantially a right angle from said

cylindrical portion to form a radial support for the tool tip, said cylindrical portion being provided with a fastening screw disposed within and projecting beyond said cylindrical portion in a direction radially inwardly of a circumference of the tool



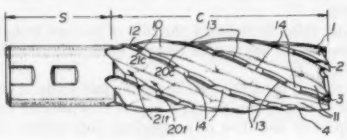
body and being threadably connectible in a threaded radial bore of the tool body, said cylindrical portion being hollow so that the fastening screw is accessible to a screw-actuating tool from a free end of the cylindrical portion.

4,212,568

CUTTING TOOL

Alfonso Minicozzi, Anjou, Canada, assignor to IMW Industries, Inc., Montreal, Canada

Filed Mar. 26, 1979, Ser. No. 24,037
Claims priority, application Canada, Jan. 5, 1979, 319210
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—53 **12 Claims**



1. A rotary cutting tool comprising a cutting portion having a longitudinal axis and a plurality of teeth extending the length of said cutting portion, each of said teeth having a cutting face and a trailing face and a relieved land surface bridging said two faces, said relieved land surface being interrupted by a plurality of spaced transverse depressions of relatively large radius arcuate cross section to form a plurality of cutting edges at the junction of said cutting face and the uninterrupted portions of said land surface, said cutting edges having a positive rake angle, and said trailing and cutting faces having surfaces which undulate generally sinusoidally from one end of said cutting portion to the other, whereby the rake angle of each cutting edge varies continuously along its length.

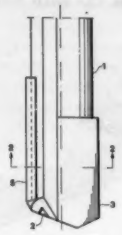
4,212,569

TUBULAR DRILL TOOL

Allan Andersson, Kungsgarden, and Bert Bergström, Sandviken, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 6, 1977, Ser. No. 829,456
Int. Cl.[2] B23B *51/06*
U.S. Cl. 408—59 **8 Claims**

1. Drill tool comprising a tubular drill shank providing an internal longitudinal passage formed by a continuous constant thickness wall of the tubular shank, said passage extending to an outer end of said shank for conducting a cutting medium, said constant thickness wall including two planar wall portions at an angle extending longitudinally of the tool, and a non-planar wall portion extending between the outer ends of the planar wall portions, at least one of said planar wall portions having an external planar face, a cutting element fastened to and extending beyond said planar face so that the element is



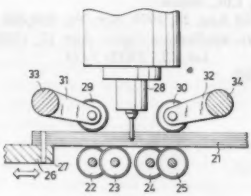
separated from the cutting medium conducted by said passage by said wall of the tubular shank, and at least one guide strip on the shank.

4,212,570

DRILLING AND ROUTING MACHINE FOR PRINTED CIRCUIT BOARDS

Bert G. K. Larsson, Tyresö, Sweden, assignor to Svenska Inhalator AB, Johanneshov, Sweden

Filed Sep. 27, 1978, Ser. No. 946,857
Claims priority, application Sweden, Sep. 27, 1977, 7710817
Int. Cl.[2] B23B *47/00*
U.S. Cl. 408—95 **5 Claims**



1. A machine for drilling and routing of printed circuit boards, comprising support means for holding and supporting a stack of superimposed boards in a predetermined support plane and for moving said stack of boards in a first direction parallel to said support plane, a tool spindle disposed above said support plane and being movable in a second direction parallel to said support plane and perpendicular to said first direction independently of said movement of said boards in said first direction, and pressure exerting means for exerting a pressure force upon said boards towards said support means in a direction substantially perpendicular to said support plane, said pressure exerting means comprising at least one roller-shaped pressing member rotatable about an axis parallel to said second direction in which said tool spindle is movable, said support means including a plurality of rollers for supporting said boards, said rollers being arranged with their axes of rotation mutually parallel and parallel to the axis of rotation of said roller-shaped members.

4,212,571

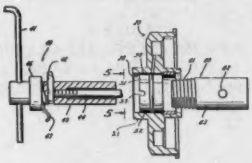
AUTOMATIC TRANSMISSIONS

Lonnie T. Reedy, and Eddie Smith, both of Freeport, Tex., assignors to Reedy and Smith, Inc., Lake Jackson, Tex.

Continuation-in-part of Ser. No. 692,432, Jun. 3, 1976, Pat. No. 4,098,382. This application Jun. 29, 1978, Ser. No. 920,186

Int. Cl.[2] B23B *41/12, 45/14*

U.S. Cl. 408—82 **4 Claims**



1. A reaming tool for reaming part way into one end of a direct clutch drum, said reaming tool comprising in operable combination,

a self-centering tool guide means for insertion in the direct clutch drum, said self-centering tool guide means being provided with a tightening means for firmly positioning the said self-centering tool guide means within said direct clutch drum,

a rotatable shaft for positioning within said self-centering tool guide means, said shaft being provided with an adjustable cutting bit protruding therefrom and having means for tightly fixing said cutting bit in a pre-selected position,

said rotatable shaft being provided with a rotating means and with a depth-setting means for limiting the distance the cutting bit may enter the direct clutch drum,

the rotatable shaft being provided with a means for applying resilient axial force to cause the cutting bit to be firmly applied to the part of the direct clutch drum which is to be reamed.

4,212,572

GEAR TEETH ROTARY-SHAVING OR ROLL-FINISHING MACHINE

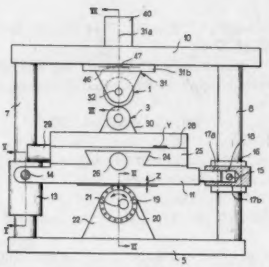
Qué Vu-Do, Meudon la-Foret, France, assignor to Renault Industries Equipments et Techniques-Riet, Boulogne-Billancourt, France

Continuation-in-part of Ser. No. 655,288, Feb. 4, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,344

Claims priority, application France, Feb. 7, 1975, 75 03825

Int. Cl.[2] B23F *19/06*

U.S. Cl. 409—37 **4 Claims**



1. Machine for finishing gear wheel teeth by shaving or rolling by means of a toothed rotary tool adapted to operate in tight meshing engagement with the gear wheel for finishing the teeth thereof, which comprises means for supporting the tool along its axis of rotation, a motor for rotatably driving said tool, means for supporting said gear wheel along its axis of rotation, the two axes of rotation of the tool and gear wheel, respectively, having at least one common perpendicular, three motorized driving means for generating respectively between said tool support means and said gear wheel support means, three powered relative movements consisting of a movement in a direction parallel to said common perpendicular and of two movements transverse to each other in planes respectively perpendicular to said common perpendicular, and synchronous programmable servo-control means for controlling said motor for rotatably driving said tool and the two motorized driving means for producing said two transverse movements.

4,212,573

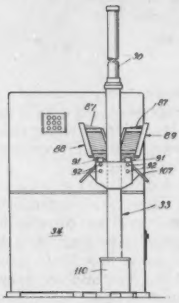
BROACHING MACHINE IMPROVEMENTS

George C. Fields, Wilmette, Ill., assignor to Ty Miles, Inc., Westchester, Ill.

Filed Nov. 7, 1977, Ser. No. 848,909

Int. Cl.[2] B26D *37/08, 41/06*

U.S. Cl. 409—251 **11 Claims**



1. A broaching apparatus for use with workpieces and comprising a frame including longitudinal ways, a carriage movable along said ways and having broach holding means thereon, workpiece positioning means mounted on the frame, and a ram connected between the carriage and the frame for reciprocating the carriage, characterized by:

said ways being opposite each other with said carriage therebetween;

said carriage having four sides comprising two pair of sides with the sides of each pair being opposite each other, the sides of one of said pair engaging said ways;

said broach holding means comprising two broach holders, with a respective one being at each of the sides of the other pair;

said ram being secured to the carriage centrally between said ways and centrally between said broach holders; and

said workpiece positioning means comprising two workpiece holders, with a respective one being adjacent each of the sides of the other pair;

whereby during a broaching movement of the carriage the loading of the carriage from the broaches and broach holders is balanced with respect to the mounting of the carriage on the ways and its connection to the ram.

4,212,574

FORAGE UNLOADER DOOR AND LATCH ASSEMBLY

Melvin E. Dreier, Dumont, Iowa 50625

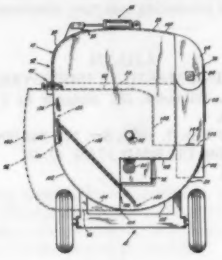
Filed Nov. 1, 1978, Ser. No. 956,584

Int. Cl.[2] B60P *1/40;* **A01F** *21/00;* **A01C** *3/06*

U.S. Cl. 414—502 **9 Claims**

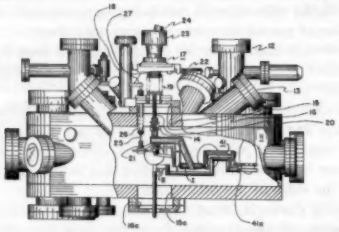
1. A material unloader, comprising:

a closed material containing body provided with an opening for access to the interior thereof,
material unloading mechanism mounted within said body and arranged for delivering material to a point exteriorly thereof,
a drive connection means mounted on said body and operatively connected to said unloading mechanism,
a drive shaft on said drive connection means adapted for connection to a source of power,
a door, means for rotatably mounting said door on said body for respective movements to closed and open positions relative to said opening,



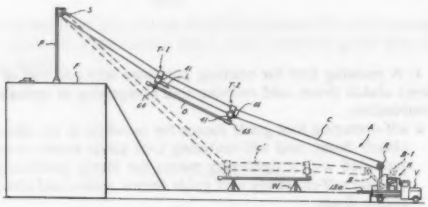
a latch assembly to selectively latch and unlatch said door relative to said body when said door is in closed position,
said door being designed for providing access to said drive shaft when said door is closed for connection of said drive shaft to a source of power,
the rotation of said door to open position causing a portion of said door to intersect a longitudinal plane passing through the connection of said drive shaft to its source of power whereby said drive shaft must be disconnected from its source of power in order to open said door, and
the open position of said door disposed to enclose said drive shaft so that it cannot be connected to its source of power until said door is moved to closed position.

4,212,575
VACUUM SEALED MANIPULATOR
E. Vincent Patrick, Lorton, and Howard K. Dickson, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 2, 1978, Ser. No. 930,437
Int. Cl.[2] B65J *1/10*
U.S. Cl. 414—8 **10 Claims**



1. A manipulator system for transporting a sample between work stations in a substantially cylindrical vacuum chamber of generally circular cross-section with a central axis normal to said cross-section comprising:
a first boom pivoted at a first end for rotation parallel to said cross-section about a boom axel parallel to said central axis;
said boom having a spindle housing and a spindle housing and a spindle jornalled therein rotatable only about the longitudinal axis of said boom;
a frame member attached to said spindle;
a sample holder attached to said frame; and
a first external control means vacuum sealed through a first circular wall of said chamber and attached to said first boom axel to translate said boom axel independently in three orthogonally related directions and to rotate said boom and frame independently about said boom axel and spindle axes, respectively.

4,212,576
PIPE HANDLING APPARATUS
Albert L. George, P.O. Box 3604, Lafayette, La. 70501
Filed Mar. 2, 1978, Ser. No. 882,656
Int. Cl.[2] E21B *19/14*
U.S. Cl. 414—22 **7 Claims**



1. An apparatus for lifting and/or lowering heavy objects and transporting them laterally comprising:
(a) a rigid frame assembly having a boom pivotally mounted thereon;
(b) a rotatable drum carried by said boom and having a helical groove therein for receiving an endless cable loop rove around the drum for frictionally gripping same but not fixedly secured thereto;
(c) a pivotally mounted rotatable sheave for receiving a loop of said endless cable;
(d) a helical groove in said rotatable drum having a sufficient length to receive a length of cable equal to the distance between such drum and said pivotally mounted sheave with a single layer of cable wrapped thereon; and
(e) hydraulic cylinder means operably connected to said pivotally mounted boom for pivoting said boom and moving said rotatable drum through an arc whereby an endless cable rove on the drum and over the pivotally mounted sheave will be slackened or tensioned by pivotal movement of the boom mounted rotatable drum.

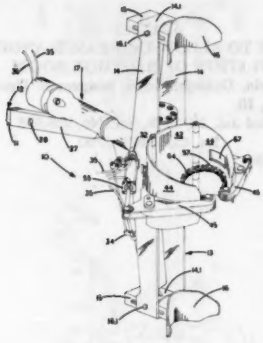
4,212,577
GRAPPLE
Ronald V. Swanson, 410 Elm St., Port Moody, British Columbia, Canada (V3H 2Z4)
Filed Dec. 21, 1977, Ser. No. 862,865
Claims priority, application United Kingdom, Jun. 25, 1977, 26735/77
Int. Cl.[2] B65G *47/90*
U.S. Cl. 414—23 **4 Claims**

1. A grapple for attachment to a boom of a hoisting machine for handling poles comprising:
an elongated supporting frame,
support saddles mounted adjacent each of said support frame,
means for pivotally attaching said supporting frame to a boom at approximately the mid-point of said supporting frame and means associated with said attaching means for rotating said supporting frame between substantially vertical and substantially horizontal positions,
an arcuate brace plate fixedly attached to said supporting frame at approximately the mid-point thereof,

a pair of arcuate arms each being hingedly connected at one end thereof to said brace plate, said arms each having a first sprocket journalled at the distal end thereof and a second sprocket journalled at approximately the midpoint of the arc of said arms and outside of said arc,

means for pivoting said arms between open and closed positions,

sprocket means attached to said supporting frame and journalled therein,



endless chain means passing around said first and second sprockets and said sprocket means and adapted to substantially encircle and grip a pole when said arms are pivoted to said closed position,

means permitting adjustment of said support saddles toward and away from said supporting frame for engaging a pole above and below said arms, and

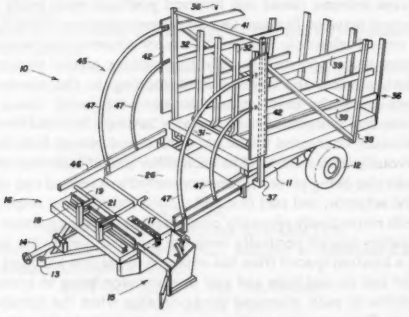
means for reversibly driving said endless chain means around said first and second sprockets and said sprocket means for rotating a pole gripped thereby about its longitudinal axis.

4,212,578

APPARATUS FOR RETAINING BALES IN POSITION ON A BALE WAGON

L. Dennis Butler, Kingsburg, Calif., assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 30, 1978, Ser. No. 891,880
Int. Cl.² A01D *87/12*; B65G *57/32*
U.S. Cl. 414—39 **7 Claims**



1. In a bale wagon having a mobile chassis, a load bed pivotably affixed to said chassis, a bale-accumulating table pivotably affixed to said chassis forwardly of said load bed to transfer bales in a tier to said load bed, a bale-receiving means affixed to said chassis, forwardly of said bale-accumulating table, means to transfer bales from said bale-receiving means to said bale-accumulating table, and sideboards affixed to said chassis and extending upwardly adjacent opposing sides of said load bed, said bale-accumulating table having a length substantially equal to the distance from said load bed to said bale receiving means, the improvement comprising:

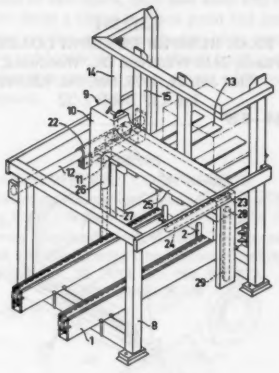
a pair of retainer means laterally positionally adjustable relative to said bale-accumulating table, said pair of retainer means being affixed to said chassis adjacent the respective sides of said bale-accumulating table and extending upwardly and rearwardly to respective sideboards adjacent said load bed and affixed thereto such that said pair of retainer means substantially defines the outer side limits of the path of pivotal movement of said bale-accumulating table during the transfer of bales to said load bed, each said retainer means encompassing an arcuate path corresponding to the pivotal movement of said bale-accumulating table, said arcuate path having a radius substantially equal to said length of said bale-accumulating table, thereby eliminating outward displacement of bales during said transfer.

4,212,579

METHOD AND APPARATUS FOR STACKING BALES

Nils E. Strömberg, Sundsvall, Sweden, assignor to Sunds Aktiebolag, Sweden

Filed Apr. 24, 1978, Ser. No. 899,319
Claims priority, application Sweden, May 4, 1977, 7705178
Int. Cl.² B65G *57/30*
U.S. Cl. 414—95 **12 Claims**



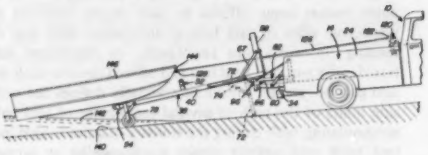
1. A method of stacking bales, comprising the steps of advancing the bales one by one in a first direction along a transport path by means of a feed conveyor to a stacking position, lifting the first bale from said stacking position to a raised position by a fork device, maintaining said first bale in said raised position with said fork device while a subsequent bale is advanced to said stacking position beneath the lifted bale, lowering said fork device toward the subsequent bale, retracting said fork device from between said first bale and said subsequent bale in a direction opposite to the first direction in which said bales are advanced so that said first bale is lowered into contact with said subsequent bale in said stacking position, lowering said retracted fork device so that it is ready to be moved forward to said stacking position, repeating the above-said steps until the desired number of bales have been positioned upon each other to form a stack in said stacking position, and moving the completed stack from said stacking position in said first direction and along said transport path directly to a receiving conveyor substantially aligned with said feed conveyor.

4,212,580

BOAT LAUNCHER FOR TRUCK BED

Ronald O. Fluck, 7th and Vine Sts., Perkasie, Pa. 18944

Filed Jun. 27, 1978, Ser. No. 919,554
Int. Cl.[2] B60P 1/04, 1/52
U.S. Cl. 414—522 15 Claims



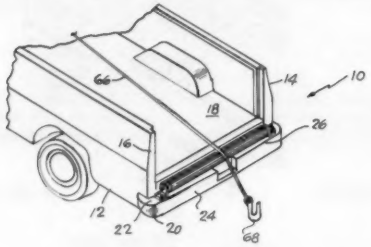
1. A support upon and from which a small boat may be longitudinally loaded and unloaded, said support including an elongated frame having front and rear ends and opposite side longitudinal members, central keel roller means journalled from the rear of said frame centrally intermediate its opposite sides, opposite side roller means journalled from opposite side portions of said frame generally centrally intermediate its opposite ends, the forward ends of said longitudinal members including upright posts, and elevated elongated horizontal transverse abutment means supported from and extending between the upper end portions of said posts for vertical adjustment relative thereto and beneath which the upper bow portion of a small boat supported from said roller means may be snugly received.

4,212,581

REAR BUMPER ROLLING LOADER

Leslie C. Pierce, 2418 Wildwood Dr., Woodward, Okla. 73801

Filed Jul. 21, 1978, Ser. No. 926,996
Int. Cl.[2] B60P 1/52
U.S. Cl. 414—529 5 Claims



1. A rolling loader adapted to be mounted to the rear bumper of a pickup truck, which comprises:

first and second L-shaped brackets each including a horizontal plate adapted to be bolted to the top surface of said rear bumper of said pickup truck, and a vertical plate having a circular aperture formed therein;

a heavy, steel tube having first and second ends positioned between said first and second brackets;

first and second ball bearing assemblies fitted respectively within said first and second ends of said tube and each including a central aperture formed therein; and

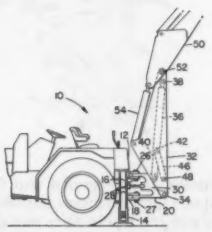
first and second solid shafts extending through said circular apertures of said first and second brackets, respectively, and through said central apertures of said first and second ball bearing assemblies, respectively, said first and second shafts being fastened to said vertical plates of said first and second brackets, respectively, so as to define a horizontal rotational axis for said tube; wherein said rear bumper includes a rear surface extending downwardly from said top surface, the junction of said top surface and said rear surface defining the rear edge of said bumper, said tube and brackets being fastened on said bumper so that the rearmost portion of said tube extends beyond said rear edge.

4,212,582

LINKAGE TO ALLOW INCREASED ANGULAR ROTATION OF BACKHOE BOOM

Gary L. Stecklein, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 20, 1978, Ser. No. 926,555
Int. Cl.[3] E02F 3/00
U.S. Cl. 414—694 7 Claims



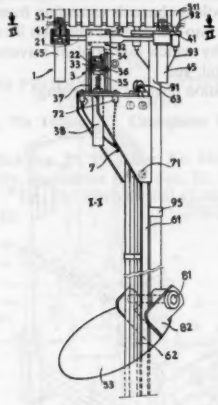
1. In a backhoe including an upright, transverse support frame, a swing frame connected to one side of the support frame for pivoting about a vertical axis to opposite sides of a centered position, a backhoe boom having one end connected to the swing frame for vertical pivoting movement about a first horizontal axis which extends transversely, when the swing frame is in its centered position, and is spaced beyond the vertical axis from the one side of the support frame and having an opposite end pivotally connected to a dipperstick for allowing relative vertical pivoting movement between the boom and dipperstick about a second axis extending parallel to the first axis and spaced beyond the vertical axis from the one side of the support frame; a first telescopic hydraulic actuator connected between the swing frame and the boom for selectively pivoting the latter vertically through approximately 165° between extreme raised and lowered positions upon being telescoped between first and second extreme positions thereof, and a second telescopic hydraulic actuator connected between the boom and dipperstick for effecting relative pivotal movement therebetween, the improvement residing in the manner of connecting the first actuator between the swing frame and boom and comprising: said actuator having a first end directly pivotally connected to the boom; first and second links being pivotally interconnected to each other and at least one of the links also being pivotally interconnected to a second end of the first actuator, and said first and second links having respective ends respectively pivotally connected to the swing frame at a location spaced vertically from the first axis, and to the boom at a location spaced from but adjacent to the first axis; and said first and second links and said first actuator being so arranged relative to each other and the boom that when the actuator is in its first extreme position the second horizontal transverse axis will be located toward the support frame at least as far as a vertical transverse plane passing through the first horizontal transverse axis and when the actuator is in its second extreme position a line drawn through the respective ends of the first and second links will approximately pass through the first horizontal transverse axis.

4,212,583

APPARATUS FOR USE IN POSITIONING A UNIT ON A TUBE-PLATE

Bernard Gebelin, Courbevoie, France, assignor to Framatome, Courbevoie, France

Filed Jun. 13, 1978, Ser. No. 915,208
Claims priority, application France, Jun. 15, 1977, 77 18392
Int. Cl.[2] B25J 3/00
U.S. Cl. 414—728 7 Claims



1. Apparatus for use in positioning a unit successively relative to a plurality of tubes of a regular array of tubes supported by a tube-plate within an envelope provided with an access opening, said apparatus comprising: positioning apparatus for supporting the unit comprising:

two arms,

connecting means for insertion in the tubes and for connection thereto,

means mounting said connection means on said arms, and

means mounting said arms for movement relative to one another in three perpendicular directions of which one is perpendicular to the plane of the plate and two are parallel to the plane of the plate, the amplitudes of movements of said arms parallel to the plane of the plate being integral multiples of the spacing between the tubes; and transporting apparatus associated with said positioning apparatus comprising:

a rectilinear guide rod for passing through said access opening,

a carriage,

means for mounting said carriage on said rod for movement therealong,

coupling means for releasably coupling said positioning apparatus to said carriage during movement thereof between the outside and the inside of the enclosure and which is disconnectable to permit movement of said positioning means across the plate, and

means mounting said coupling means on said carriage.

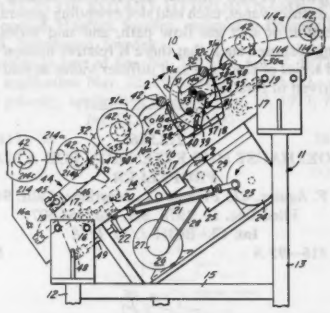
4,212,584

MATERIAL HANDLING APPARATUS

Donald O. Johnson, Matawan, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 25, 1978, Ser. No. 954,469
Int. Cl.[2] B65H 5/18
U.S. Cl. 414—748 11 Claims

1. In material handling apparatus, conveyor means for moving generally cylindrical articles transversely of their polar axes, comprising: means defining an inclined track for supporting said articles to be moved therealong from a higher to a lower level; a plurality of article-engaging pivotable rocker and finger elements disposed in uniformly spaced relation along said track, said rocker elements being pivotable in a direction to accommodate gravitational movement of an article along said track and present it for engagement with a successive one of said finger elements whereupon said finger element is operable to accommodate gravitational movement of said article along said track and present it for engagement with a successive rocker element, means for driving said rocker and finger elements cyclically in the recited operations thereof to accommodate controlled gravitational movement of



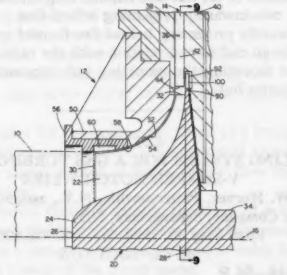
an article along said track from said higher to said lower level; and each said rocker element comprises a head rocker presented to the upper end of said track and a tail rocker presented to the lower end of said track, each said head and tail rocker being pivotable about a common pivot point and including an article engaging portion of generally cuspidate configuration movable above and below the plane of said track in the recited accommodation of movement of an article while engaged by said finger element.

4,212,585

CENTRIFUGAL COMPRESSOR

Michael C. Swarden, Cambridge, Mass.; Shankar S. Magge, Manchester, Conn.; Willem Jansen, Weston, and Anthony F. Carter, Newton Highlands, both of Mass., assignors to Northern Research and Engineering Corporation, Cambridge, Mass.

Filed Jan. 20, 1978, Ser. No. 870,871
Int. Cl.[2] F04D 29/44
U.S. Cl. 415—53 R 17 Claims



1. In a centrifugal compressor having casing structure defining inlet and outlet passages and a gas flow path between said passages,

an impeller in said casing structure mounted for rotation about a compressor axis, said impeller having a circumferentially arranged series of impeller vanes in said gas flow path and arranged to receive gas from said inlet passage

and to discharge gas centrifugally in a radially outward direction, and

a diffuser section in said gas flow path downstream from said impeller, said diffuser section having a circumferentially arranged series of vanes in said gas flow path and extending in a radially outward direction through said diffuser section from said impeller towards said outlet passage,

an improvement for extending the stable operating range of said centrifugal compressor comprising

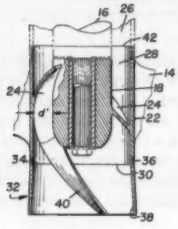
a circumferentially extending series of slots disposed at the periphery of said impeller adjacent the leading edges of the diffuser vanes, each said slot extending generally in the direction of said gas flow path, and said series of slots being disposed such that there is relative motion between said series of slots and said diffuser vanes as said impeller is driven in rotation.

4,212,586

TURBOEXHAUST HUB EXTENSION FOR A MARINE PROPELLER

Mervyn F. Aguiar, 623 Plumas Ct., Martinez, Calif. 94553

Filed Dec. 19, 1978, Ser. No. 964,597
Int. Cl.[2] B63H *1/16, 1/18*
U.S. Cl. 416—93 A 5 Claims



5. In a marine propeller having a shaft receiving central hub and a blade mounting hub concentrically mounted about the central hub by radially extending vanes thereby permitting exhaust gases to flow therebetween an improvement comprising:

an annular ring adapted to be received about the hub of a marine propeller distal of the drive shaft, said annular ring having an inside dimension proximal the hub substantially equal to the inside dimension of the hub and an inside dimension distal of the hub at least equal to the inside dimension of the hub said annular ring extension having at least two inwardly projecting helical fins;

said inwardly projecting helical fins formed to meet generally in an end to end relation with the radially extending vanes mounting the mounting hub concentrically about the center hub.

4,212,587

COOLING SYSTEM FOR A GAS TURBINE USING V-SHAPED NOTCH WEIRS

Michael W. Horner, Pattersonville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

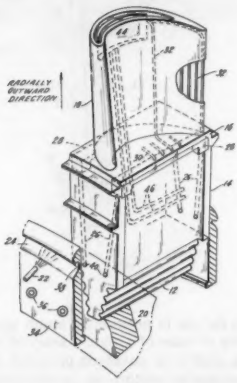
Filed May 30, 1978, Ser. No. 910,500
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—96 R 9 Claims

1. An improved cooling system for a gas turbine of the type including a turbine disk mounted on a shaft rotatably supported in a casing, a plurality of turbine buckets extending radially outward from said disk, each of said buckets including a root portion mounted in said disk, a shank portion extending radially outward from said root portion to a platform portion, and an air foil extending radially outward from said platform portion, said buckets receiving a driving force from a hot fluid moving in a direction generally parallel to the axis of said shaft and the driving force being transmitted to said shaft via said turbine disk, said cooling system comprising:

(A) means located radially inward of said platform for introducing a coolant liquid in a generally radially outward direction into a plurality of shank supply channels formed in said shank portion of each of said buckets, said shank supply channels guiding said coolant liquid into a distribution channel located in said platform of each of said buckets;

(B) platform coolant channels extending from said distribution channels into foil coolant channels located in each of said buckets by which said coolant traverses the surface area of said foil; and

(C) said distribution channel comprising:



(1) a liquid coolant collection trough extending in a direction generally parallel to said axis and adapted to collect coolant liquid supplied by said shank supply channels in such a manner as to form a pool of coolant liquid in said trough;

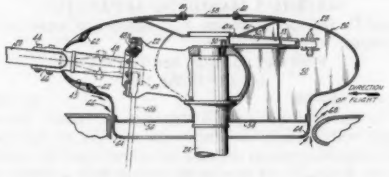
(2) a plurality of metering means for distributing coolant liquid from said pool of coolant liquid into said platform coolant channels in such a manner that each of said platform coolant channels receives a substantially equal supply of coolant liquid, each of said metering means including a V-shaped notch weir formed in said liquid coolant collection trough along the innermost radial portion of said trough such that the coolant collected in said trough can flow into said notches when the level of coolant in said trough reaches a sufficient height.

4,212,588

SIMPLIFIED ROTOR HEAD FAIRING

Evan A. Fradenburgh, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 11, 1978, Ser. No. 904,956
Int. Cl.[2] B64C *27/38*
U.S. Cl. 416—141 8 Claims



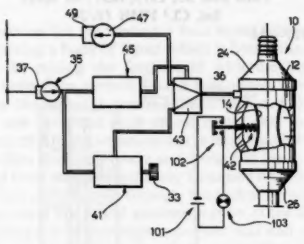
1. A fairing for enclosing the main rotor head of a multi-

bladed helicopter comprising an annular streamlined member providing a chamber for said rotor head, said fairing having a plurality of peripheral cutouts, one for each blade of the rotor, and means in said chamber for preventing air which enters said chamber through one of said cutouts due to forward movement of the helicopter in flight from flowing out of said chamber through another of said cutouts, said means comprising a plurality of partitions which divide said chamber into non-communicating compartments, each of which has only one of said cutouts.

4,212,589
DEVICE FOR PRODUCING AN ARTIFICIAL BLOOD CIRCULATION

Roberto Bosio, Via Torino 227, Castiglione Torinese (Torino), Italy

Filed Sep. 20, 1978, Ser. No. 944,211
Claims priority, application Italy, Sep. 21, 1977, 69080 A/77
Int. Cl.[2] F04B *49/06, 43/06*
U.S. Cl. 417—12 6 Claims



1. Pump for producing an artificial blood circulation of the type comprising:

a tubular body having end fittings for connection to a blood circuit,

unidirectional inlet and outlet valves in respective end fittings,

an elastically deformable tubular membrane, located within the tubular body and fixed to the latter at its two ends to define a pumping chamber within the tubular membrane, in communication with the two said end fittings, and to define an annular control chamber between the tubular body and the said tubular membrane;

means for placing said annular control chamber alternately in communication with a source of driving fluid under pressure and with a source of lower pressure to deform the tubular membrane cyclically between an undeformed substantially cylindrical shape and a deformed substantially hourglass shape and vice versa, and

a pressure regulator for regulating the pressure of the driving fluid,

wherein the improvements reside in the further provision of:

a feeler supported in the tubular body of the pump for sliding movement along an axis which is substantially perpendicular to the longitudinal axis of said tubular body and is located at substantially equal distances from the ends of said tubular body;

resilient means urging the inner end of the feeler into contact with the outer surface of the tubular membrane;

a switch having fixed contact means carried by the tubular body of the pump and movable contact means carried by said feeler, said movable contact means coming into contact with said fixed contact means to close the said switch when the feeler, starting from a rest position corresponding to the undeformed configuration of the tubular membrane, has been displaced to a switch closure position corresponding to a predetermined deformation of the tubular membrane;

stop means to prevent further displacement of said feeler under the action of said resilient means after said closure of the switch

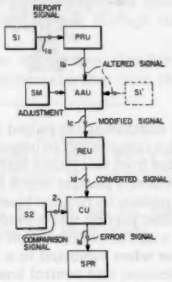
an electrical circuit which is completed upon said closure of the switch, and

a signalling member in said electrical circuit which is energised upon closure of said switch.

4,212,590
METHOD AND APPARATUS FOR THE CONTINUOUS REGULATION OF ROTARY HYDRODYNAMIC PUMPS

Arne F. Jonsson, Hagfors, Sweden, assignor to Pumpex Production AB, Bandhagen, Sweden

Continuation-in-part of Ser. No. 785,107, Apr. 6, 1977. This application Nov. 22, 1978, Ser. No. 963,122
Claims priority, application Sweden, Nov. 24, 1977, 7713324
Int. Cl.[2] F04B *49/00*
U.S. Cl. 417—24 16 Claims



3. A method of regulating the speed of a rotary dynamic pump in dependence on a selected reference parameter, comprising the steps of:

(a) sensing, by means of a first sensor, one of the acutal and desired values of one of the two parameters, pump speed and flow rate;

(b) snesing, by means of a second sensor, the other of said values of the other of said parameters;

(c) generating an altered signal proportional to a selected power of the parameter sensed by the first sensor;

(d) generating a comparison signal proportional to the parameter sensed by the second sensor;

(e) algebraically adding a selected term to the altered signal to produce a modified signal;

(f) extracting a root of a selected power from the modified signal to produce a converted signal;

(g) feeding said converted and comparison signals into a comparator and obtaining an error signal; and

(h) feeding said error signal into a speed regulator for a pump.

13. A regulator for controlling the speed of a rotary hydrodynamic liquid pump, wherein a pump speed signal is converted into a signal related in value to the flow rate of the pump comprising:

a wedge shaped float for sensing the level of a liquid in a container in fluid communication with the pump and for providing a pump speed signal related in value to a predetermined power of the pump speed;

means providing a set point related in value to a ratio between a static head of the pump and a pressure head generated by the pump at zero flow;

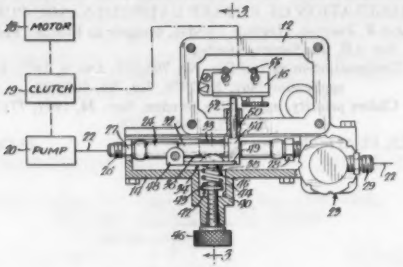
means for providing a signal related to the quantity A', wherein A' is proportional to the difference between the pump speed signal and the set point; and

means for generating a flow rate signal responsive to a predetermined root of the quantity A' for regulating the speed of the pump.

4,212,591
PRESSURE CONTROL FOR PUMPS

Robert E. Lamontagne, Boulder, and Jon V. Scull, Longmont, both of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill., Croyle; Carlton R.

Filed Aug. 10, 1978, Ser. No. 932,520
Int. Cl.[2] F04B 49/08
U.S. Cl. 417—38 5 Claims

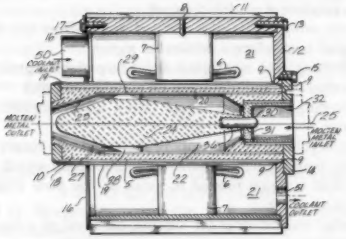


1. A device for controlling the output pressure of a pump or the like, said device comprising: an output line for transmitting fluid under pressure from said pump; said output line including a control hose portion; a plunger urged into engagement with said control hose portion by resilient biasing means for deforming said control hose portion into a predetermined configuration inconsistent with the configuration the control hose portion would assume when subjected to a predetermined variation in internal pressure; said control hose portion being movable between said configurations responsive to variations in the pressure of the fluid in the line; means responsive to the movement of said control hose portion for controlling the pump; and means for adjusting the force of said biasing means.

4,212,592
ELECTROMAGNETIC PUMP FOR MOLTEN METALS

Eugene E. Olich, Aptos, and Robert B. Weissinger, Santa Clara, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 31, 1978, Ser. No. 956,282
Int. Cl.[2] H02N 4/20
U.S. Cl. 417—50 40 Claims

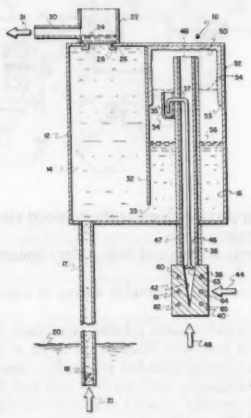


1. An electromagnetic pump for molten metals comprising:
a housing;
a duct through the housing having an inlet and an outlet;
means for introducing molten metal into the inlet of the duct;
means for producing a magnetic field within the duct to produce rotational flow of the molten metal within the duct;
an inductor having an exterior defined by a divergent first conical portion and a convergent second conical portion, said portions having facing bases and a common axis,
the divergent first conical portion having its crown facing the inlet, and the convergent second conical portion having its crown facing the outlet;
means securing the inductor to the duct; and
a plurality of flutes that span the annulus between the interior wall of the duct and exterior of the inductor in the region of the bases said flutes converting at least a substantial portion of the rotational flow of the molten metal to axial flow.

4,212,593
HEAT-POWERED WATER PUMP

Duane G. Chadwick, Logan, Utah, assignor to Utah State University Foundation, Logan, Utah

Filed Jan. 25, 1979, Ser. No. 6,319
Int. Cl.[3] F04B 19/24
U.S. Cl. 417—53 26 Claims



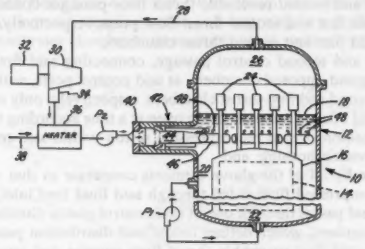
24. A method for pumping water comprising:
forming a pumping chamber with a downwardly oriented opening;
interconnecting a reservoir chamber with the downwardly oriented opening of the pumping chamber;
providing inlet check valve means and outlet check valve means to the reservoir chamber, the inlet check valve means being in fluid communication with a water source;
fabricating a vaporizing means having a predetermined heat capacity to accommodate vaporizing a predetermined quantity of volatile liquid distributed thereto;
heating the vaporizing means;
metering a predetermined quantity of volatile liquid to the vaporizing means thereby generating a vapor;
displacing water from the reservoir chamber through the outlet check valve means by delivering the vapor to the pumping chamber and forcing water from the pumping chamber with the vapor; and
replacing water in the reservoir chamber and the pumping chamber by condensing the vapor in the pumping chamber thereby creating a partial vacuum in the pumping chamber and causing atmospheric pressure to force water from the water source through the inlet check valve means.

4,212,594

LIQUID FEEDING AND MIXING ARRANGEMENT INCLUDING AN EJECTOR THERMAL SLEEVE

Russell E. Sheer, Jr., Cohoes, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,384
Int. Cl.[2] F04F 5/00
U.S. Cl. 417—54 6 Claims



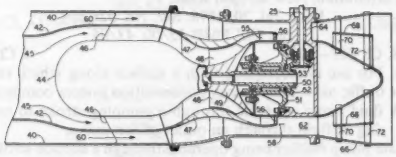
6. In a process for (a) feeding a feed liquid into a pressure vessel containing a body of liquid which is hotter than the feed liquid and (b) mixing the feed liquid with the liquid body wherein a main flow portion of the feed liquid is conducted sequentially through (1) a supply line disposed within the cavity of, and provided with an imperfect seal to, an inlet nozzle connected to the vessel, and (2) a feed liquid distribution member within the liquid body and having at least one outlet port spaced from and directed away from said nozzle such that said main flow portion exits through the port as a high-velocity jet into the liquid body, and another portion of the feed liquid forms a leakage flow past said imperfect seal and along said nozzle, the improvement comprising: providing a member defining a confined leakage flow zone within said cavity, drawing said leakage flow through said zone by suction created by said jet in a downstream portion of said zone disposed in liquid-ejecting register with said port, and ejecting said leakage flow with the main flow exiting said port.

4,212,595

AIR PUMP WITH PRIMARY AND SECONDARY INLET FLOW CHANNELS

Charles Kuintzle, Jr., Monroe, and Joseph P. Murphy, Newtown, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Oct. 4, 1978, Ser. No. 948,405
Int. Cl.[3] F04B 23/08
U.S. Cl. 417—84 5 Claims



1. An air pump useful in pumping gases containing abrasive particles comprising:

an outer cylindrical housing having an axially extending inner duct, said duct having an inlet and an outlet;

a cylindrical shroud mounted within the housing to divide the duct into inner and outer axially extending channels;

a source of primary air flow being relatively free of contaminants connected to the inner channel;

a source of secondary airflow which is desired to be pumped, said source being connected to the outer channel of the duct;

a streamline body of revolution mounted within the housing on the axis thereof, said body positioned at the inlet end of the inner channel to cause a uniform annular primary airflow, said body supported by equi-spaced radial inlet struts connecting said streamline body of revolution with said outer housing, each of said struts along its length penetrating through a close fitting opening in the outer wall separating the primary and secondary flow channels;

a powered rotor mounted within the housing for rotation about the axis thereof, downstream of the streamlined body of revolution, the blades of said rotor extending into the inner channel of the duct to accelerate the primary airflow;

an annular shaped ejector nozzle formed in the outlet end of the shroud downstream of the rotor to cause further acceleration of the primary airflow;

a suction chamber formed in the duct downstream of the ejector nozzle to receive the high velocity primary airflow therefrom, and connected to the outer channel to receive the secondary airflow therefrom, the flow of high velocity primary airflow into said chamber serving to pump the secondary airflow through the outer channel; and

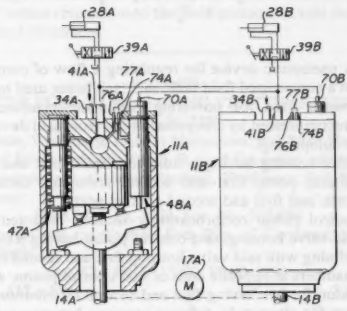
means connected to the suction chamber to dispense the contents of the suction chamber from the pump.

4,212,596

PRESSURIZED FLUID SUPPLY SYSTEM

Walter Z. Ruseff, New Lenox, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 23, 1978, Ser. No. 880,822
Int. Cl.[2] F04B 49/00
U.S. Cl. 417—216 12 Claims



1. A pressurized fluid supply system for a plurality of fluid-operated devices comprising:

a plurality of variable displacement pumps each having a fluid inlet and a pressurized fluid discharge outlet for supplying fluid to a separate one of said devices and each having a displacement control element which may be shifted to vary the displacement thereof between a minimum value and a maximum value, each of said pumps having means for producing net swivel torque forces that urge said control element towards the minimum displacement position,

each of said pumps having a displacement-increasing biasing means acting on said control element for urging said control element towards the maximum displacement position with a force which increases as fluid pressure at said discharge outlet of the pump increases and which decreases as said discharge outlet pressure decreases, and further having a displacement-decreasing biasing means acting on said control element for urging said control element towards the minimum displacement position, said displacement-increasing biasing means exerting a stronger

force on said control element than said displacement-decreasing biasing means, and

system output-limiting means for causing the discharge pressure of a first of said pumps to supplement the force exerted on said control element of a second of said pumps by said displacement-decreasing biasing means of said second pump to produce a greater displacement decrease at said second pump than occurs at said first pump when the discharge pressure of said first pump approaches a maximum value while the discharge pressure of said second pump is at a lower value.

4,212,597

PNEUMATIC INSTALLATIONS

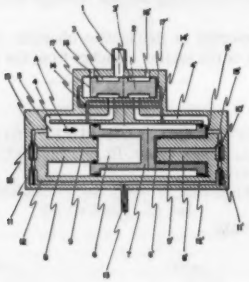
Salvador Gali Mallofre, Londres, 29, Barcelona, Spain

Filed Jun. 29, 1978, Ser. No. 920,354

Claims priority, application Spain, Mar. 22, 1978, 468.200

Int. Cl.[2] F04B *17/00*

U.S. Cl. 417—225 **5 Claims**



1. A pneumatic device for regulating a flow of compressed fluid to a compressed fluid tank, said tank being used to supply compressed fluid for powering pneumatic machinery and being recompressed by compressed fluid from said device, said device comprising:

a valve housing having a fluid feed inlet, first and second exhaust ports, first and second reversible thrust flow ports, and first and second control ports;

a control piston reciprocatingly slidably mounted within said valve housing, said control piston having a shape for defining with said valve housing first and second opposed chambers at opposite ends of said control piston, and said piston further having first and second distribution chambers for alternately defining passages between said fluid feed inlet and said first and second reversible thrust flow ports, and dimensioned such that when one of said thrust flow ports communicates with said fluid feed inlet, the other of said thrust flow ports communicates with a corresponding one of said exhaust ports, said opposed chambers having said control ports located correspondingly communicating therewith;

a recompression housing having first and second thrust chambers and first and second protrusions at opposite ends thereof, said protrusions having recompression passages therein which communicate with said first and second thrust chambers, respectively, said recompression passages having one way valves therein for allowing fluid flow from said thrust chambers to said recompression passages, said recompression housing having a single outlet conduit leading from said recompression housing, said recompression housing further having first and second tank flow passages respectively connecting said first and second recompression passages with said outlet conduit, said tank flow passages having tank one way valves for allowing fluid flow from said recompression passages to said single outlet conduit;

a recompression piston reciprocatingly slidably mounted within said recompression housing, said recompression piston having a shape whereby said thrust chambers are located at opposite ends thereof, said piston being supported by said protrusions and further shaped for cooperating with said protrusion for defining therewith first and second recompression chambers, each of said recompression chambers communicating with a respective recompression passage;

first and second reversible thrust flow passages connecting said first and second thrust flow ports, respectively, with said first and second thrust chambers;

first and second control passage, connecting said first and second opposed chambers, at said control ports, with said second and first thrust chambers, respectively, only one of said control passages being open at a time according to the position of said recompression piston within said recompression housing; and

whereby all of the above elements cooperate so that when compressed fluid is fed through said fluid feed inlet, said fluid passes through one of said control piston distribution chambers, which defines one of said distribution passages to said first reversible thrust flow passage and into said first thrust chamber and further passes, through said corresponding recompression passage one way valve and recompression passage, into said first recompression chamber, thereby displacing said recompression piston in a first direction and thereby causing compressed fluid in said second thrust chamber and recompression chamber to be expelled through corresponding reversible thrust flow and recompression passages, said fluid in said second thrust chamber passing out through said second exhaust port and said fluid in said second recompression chamber passing through said corresponding recompression passage to said corresponding tank passage valve and further, through said corresponding tank passage to said outlet conduit and therefrom to said compressed air tank, simultaneously, said recompression piston opening said first control passage as a result of said recompression piston movement, and compressed fluid flowing through said first control passage for causing said control piston to move, for causing the elements opposite to those recited cooperating elements to cooperate in the same manner as recited, the operation of said device being cyclical and continuous.

4,212,598

TRAFFIC-OPERATED AIR-POWERED GENERATING SYSTEM

Dwain F. Roche, Manhattan, and Stanley E. Banks, New Strawn, both of Kans., assignors to Energy Development Corporation, New Strawn, Kans.

Filed Jul. 20, 1978, Ser. No. 926,334

Int. Cl.[2] F04B *35/00, 43/05*

U.S. Cl. 417—229 **9 Claims**

1. For use in association with a surface along which recurrent traffic moves, an energy conservation system comprising:

A fluid pump operable through a pumping stroke to emit a slug of fluid through an outlet of the pump,

said pump further being operable through a suction stroke to intake a new supply of fluid through an inlet of the pump;

a first check valve operably associated with said inlet of the pump for permitting fluid flow into the pump through said inlet during said suction stroke and for precluding fluid flow out of the pump through said inlet during said pumping stroke;

a second check valve operably associated with said outlet of the pump for permitting fluid flow out of the pump through said outlet during said pumping stroke and for precluding retrograde fluid flow into the pump through said outlet during said suction stroke;

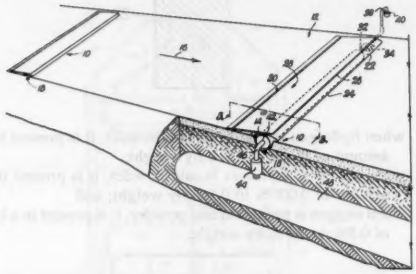
means for disposing said pump in force-transmitting relationship to said surface;

a traffic-operated actuator disposed in force-transmitting

relationship with said pump in opposition to said surface for receiving operating impulses from said traffic; and

fluid-operated means coupled in flow communication with said outlet of the pump beyond said second check valve for receiving slugs of pressurized fluid from the pump and for performing a work function,

said pump including a resilient device having a variable volume pumping chamber associated therewith, said device flexing to a position of minimum chamber volume during said pumping stroke and returning to a position of maximum chamber volume during said suction stroke,



said device comprising a resiliently walled tube disposed transversely of the path of travel of said traffic,

said tube being provided with a bearing member between the tube and said actuator for preventing direct physical contact between said actuator and the tube,

said surface including a recess receiving said tube, said recess having a liner therein between the surface and the tube, said bearing member being hingedly secured to said liner for flexure with the tube during said pumping and suction strokes thereof.

4,212,599

METHOD AND DEVICE FOR REGULATING THE OUTPUT QUANTITY OF COMPRESSED MEDIUM OF SINGLE AND MULTI-STAGE SCREW AND TURBO COMPRESSOR SYSTEMS

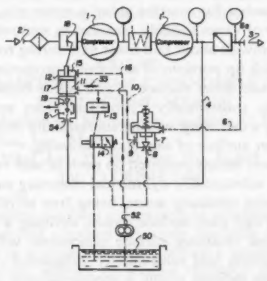
Heinz Lantermann, Kirchhellen, Fed. Rep. of Germany, assignor to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 18, 1978, Ser. No. 934,889

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737677

Int. Cl.² F04C *29/10*

U.S. Cl. 417—295 **10 Claims**



1. A device for regulating the output quantity of a gaseous medium of a compressor system having a suction for the compressors for receiving the gaseous medium and a discharge for the compressors for discharging compressed gaseous medium, comprising:

flow control means in the suction for throttling the flow of the gaseous medium to the compressor system,

a control piston connected to said flow control means for actuating the throttling of the flow,

a cylinder,

said control piston having a piston part disposed within said cylinder defining a first and second chamber on opposite sides thereof,

a bleed valve having a passage connected to the discharge and to atmosphere and valve seat means adjacent said passage,

valve means connected to said control piston and movable in said passage between a position in which said valve means engages said valve seat means for closing said passage and a position in which said valve means disengages from said valve seat means for opening said passage,

a reservoir for holding a liquid,

pump means for pressurizing and pumping at least part of the liquid from said reservoir,

conduit means connected between said pump means and said cylinder to provide a constant fluid pressure to said first chamber,

a pressure regulator connected between said pump means and said cylinder for passing the pressurized liquid from said pump means to said second chamber responsive to the gaseous pressure in the discharge, said pressure regulator being operatively connected to said discharge,

a fluid throttle shunt means between said pressure regulator and said control piston for delivering liquid to said reservoir, and

said control piston being operative to open and close said passage of said bleed valve and to actuate said flow control means responsive to the fluid pressure in said first and second chambers.

4,212,600

VEHICLE FUEL TANK HAVING VENTED INTERNAL FUEL PUMP

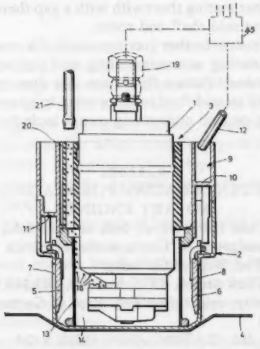
Heinz Otto, Wolfsburg; Helmut Hoppmann, and Bodo Henning, both of Brunswick, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,698

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748963

Int. Cl.² F04B *17/00*; F01D *5/10*

U.S. Cl. 417—360 **3 Claims**



1. A fuel pump assembly for mounting within a vehicle fuel tank comprising a reserve tank which is arranged to stand essentially perpendicularly on the bottom of said fuel tank and

which is equipped with valve means for allowing the influx of and preventing the outflow of fuel, a fuel pump having an inlet and mounted within said reserve tank by at least one noise dampening cylindrical intermediate layer, a filter screen mounted to said reserve tank, surrounding said pump inlet and forming an intake chamber, a vent conduit sealed against fluid entry from said fuel tank and a vent channel bypassing said intermediate layer and connecting said intake chamber upstream of said pump inlet with said vent conduit.

4,212,601

MOTOR PUMP

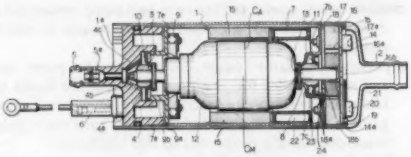
Yoshifumi Ina, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 802,532, Jun. 1, 1977, Pat. No. 4,181,473. This application Aug. 11, 1978, Ser. No. 932,933

Claims priority, application Japan, Jul. 1, 1976, 51-78567; Jul. 1, 1976, 51-78568; Aug. 22, 1977, 52-100275

Int. Cl.[2] F04B *17/02, 35/00*

U.S. Cl. 417—365 **5 Claims**



1. A motor pump comprising:

a motor unit including a cup-shaped ferromagnetic yoke member having one end open, the other end being a bottom portion having an opening, magnetic field supplying means in said yoke member, an armature integral with a shaft having a portion extending through said opening in the bottom of said cup-shaped yoke member, a bearing holder sealed securely to said open end of said cup-shaped yoke member having a fluid outlet member, and first and second bearing means secured respectively in said opening in the bottom portion of said cup-shaped yoke member and to said bearing holder for carrying said shaft, and

a pump unit including a pump stator secured to the bottom portion of said cup-shaped yoke member for defining a pump chamber into which said shaft extends, a rotor disposed in said pump chamber, and a fluid inlet member for communicating said fluid inlet member with said pump chamber and a pump outlet member for communicating said pump chamber with the inside of said motor unit,

connecting means including at least one keyway and a key tpe member mating therewith with a gap therebetween for connecting said shaft and rotor,

said pump stator further having means for communicating said connecting means including said gap with said fluid inlet member to cause fluid flow in a direction from said motor unit to said fluid inlet member to prevent rust from gathering on said connecting means including said gap.

4,212,602

WEAR-RESISTANT COATING FOR SEALING STRIPS IN ROTARY ENGINES

Ulrich Buran, and Horst Beyer, both of Burscheid, Fed. Rep. of Germany, assignors to Goetzewerke Friedrich Goetze AG, Burscheid, Fed. Rep. of Germany

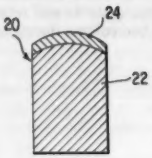
Filed Aug. 8, 1975, Ser. No. 603,249

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1974, 2438923

Int. Cl.[2] F01C *19/04;* **B23K** *9/04*

U.S. Cl. 418—178 **27 Claims**

1. In a method of providing a wear-resistant coating on a sealing strip of a rotary engine having a trochoidal chamber made of a supereutectic aluminum-silicon alloy comprising applying a coating consisting essentially of chromium or a chromium alloy containing at least about 20% by weight chromium, and wherein said alloy contains between about 3% and about 80% of at least one of the alloying elements iron, manganese, nickel, cobalt, molybdenum, tantalum, niobium, tungsten, zirconium, or titanium, the improvement wherein said coating is applied as a powder which contains at least one of the elements hydrogen, nitrogen and oxygen, and



when hydrogen is present in said powder, it is present in an amount of 0.1% to 0.5% by weight;

when nitrogen is present in said powder, it is present in an amount of 0.005% to 0.5% by weight; and

when oxygen is present in said powder, it is present in a level of 0.5% to 2.5% by weight.

4,212,603

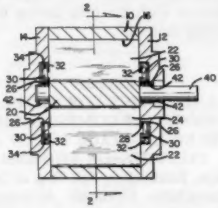
ROTARY VANE MACHINE WITH CAM FOLLOWER RETAINING MEANS

Ronald E. Smolinski, 4081 Forest Ridge Blvd., Dayton, Ohio 45424

Filed Aug. 18, 1978, Ser. No. 934,952

Int. Cl.[2] F01C *1/00;* **F03C** *3/00;* **F04C** *1/00, 17/00*

U.S. Cl. 418—256 **13 Claims**



1. A rotary machine comprising:

a stator housing having an inner surface defining a stator chamber, said housing further defining inlet and outlet ports through said housing into said chamber,

a substantially cylindrical rotor rotatably mounted within said chamber for rotation about a rotor axis,

a plurality of vanes slidably received in said rotor and movable therewith about said rotor axis during rotation of said rotor with tip portions of said vanes projecting outwardly toward said inner surface of said stator housing,

continuous, substantially cylindrical, cam surface means defining a camming surface substantially concentric with said inner surface of said stator housing,

cam follower means mounted on each of said vanes contacting said substantially cylindrical camming surface, and

cam follower retaining means being free to rotate with respect to said cam surface means, defining a substantially cylindrical retaining surface concentric with said camming surface, said substantially cylindrical retaining surface being defined within a groove on said cam follower retaining means, said retaining means engaging said cam follower means within said groove and urging said cam follower means against said cam surface means, whereby said cam follower means position said vanes during rota-

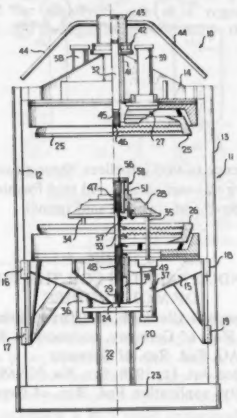
tion of said rotor and relative axial movement between said cam follower retaining means and said vanes is prevented.

4,212,604

RIMLESS, PRODUCTION MOLD

Kenneth T. MacMillan, 347 Hazel St., P.O. Box 557, Macon, Ga. 31202

Filed Jan. 9, 1979, Ser. No. 2,064
Int. Cl.[2] B29H 5/04
U.S. Cl. 425—19 **20 Claims**



1. A retreading mold comprising first and second relatively movable platens, means for moving said platens between first adjacent closed and second remote open positions, first and second matrices carried by said first and second platens defining in said first position a chamber within which is adapted to be housed a tire to be retreaded, means for locking said platens in said first position, said locking means including a pair of generally coaxial shafts, a first of said shafts being carried by said first platen and a second of said shafts being carried by said second platen, said first and second shafts having respective first and second end portions in generally opposing relationship to each other when said platens are in said first position, means coupling said first and second end portions to each other when said platens are in said first position for locking said platens in said first position, and means positionable between said coupling means and said first shaft when said platens are in said second position for axially adjusting the position of said second platen relative to said second shaft upon rotation of said first shaft whereby said platens can be locked at different distances from each other in said first position.

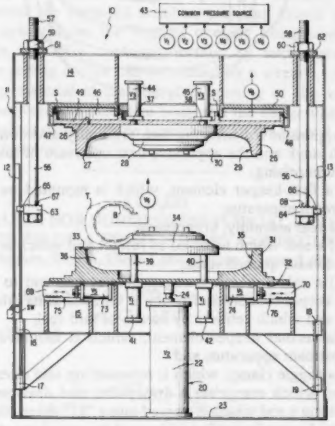
4,212,605

MOLDING MACHINE WITH EXPANDABLE CHAMBER AND LOCKING MEANS

Kenneth T. MacMillan, Macon, Ga., assignor to Donald MacMillan & Son, Inc., Macon, Ga.

Filed Apr. 23, 1979, Ser. No. 32,401
Int. Cl.[2] B29H 5/04
U.S. Cl. 425—20 **21 Claims**

1. A retreading machine comprising in combination:
first and second opposed relatively movable mold bodies defining in a closed position thereof a generally annular mold cavity adapted to receive therein a tire to be retreaded which tire has an inner surface defining an annular tire chamber;
said first and second mold bodies being carried by respective first and second supports;
means for moving said first and second supports relative to each other thereby moving said first and second mold bodies relative to each other between said closed position and an open position at which said first and second mold bodies are in relatively spaced relationship;
a pair of relatively movable telescopic members defining another chamber;
one of said telescopic members being carried by said first support and another of said telescopic members carried by said first support and carrying said first mold body;
said another chamber having an area of a size at least equal to the area of said annular tire chamber;
means for pressurizing said another chamber when said mold bodies are in the closed position thereof thereby to move said telescopic members relative to each other and thereby urge said mold bodies into intimate engaging relationship;
means for pressurizing a tire within said annular tire chamber when said mold bodies are in the closed position thereof;

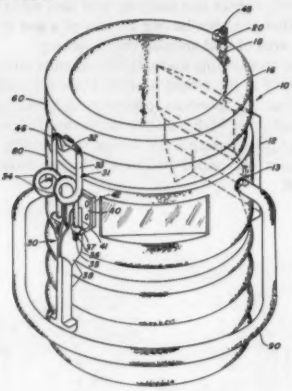


the net effect of said pressurizing means in conjunction with the areas of said another and annular tire chambers being such as to urge the mold bodies at all times in the closed position of said mold bodies into intimate engaging relationship against oppositely acting pressure within said annular tire chamber which tends to urge said mold bodies out of intimate engaging relationship;
first and second axially opposed relatively movable bead aligner wheels;
said second bead aligner wheel being carried by said second support;
said first and second bead aligner wheels being disposed generally centrally of said first and second mold bodies, respectively, and in part defining said annular mold cavity in said closed position;
first and second means for respectively moving said first and second bead aligner wheels individually relative to each other and relative to said first and second mold bodies; and
said first bead aligner wheel and said first moving means therefor being carried by said another telescopic member.

4,212,606
QUENCH STACK REEL ASSEMBLY AND CLAMPING DEVICE

Harold G. Sachleben, Sr., Bellmawr, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 25, 1978, Ser. No. 909,427
Int. Cl.[2] B29C *25/00*
U.S. Cl. 425—72 S 4 Claims



1. Apparatus for bringing into proximity and connecting a quench stack and the apparatus next upstream of said quench stack, comprising:

(A) a first keeper element, which is mounted on said upstream apparatus;

(B) a reel assembly, comprising:

(1) a reel which is biased to retract and which is mounted to said quench stack;

(2) a cable, which is engageable at one end to said first keeper element and which is fastened at its other end to and which retracts by means of said reel;

(C) a second keeper element, which is mounted on said upstream apparatus; and

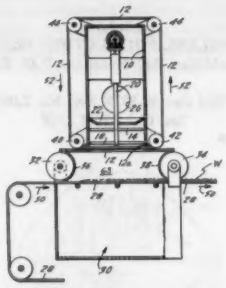
(D) a toggle clamp, which is mounted on said quench stack and which comprises a drawpiece, said drawpiece comprising a rod which is curved into a "U" shape, the base of which engages with said second keeper element, each of the legs of said "U"-shaped rod describing a circle bend prior to terminating in a threaded shank for mounting to said clamp, said rod approximating a circle in cross-section, the ratio of the mean diameter of said circle bend to the diameter of said rod ranging from 3 to 5.

4,212,607
FIBER DISTRIBUTOR

Fredric N. Miller, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 23, 1978, Ser. No. 918,691
Int. Cl.[2] B28B *5/00*
U.S. Cl. 425—83.1 2 Claims

1. An apparatus for forming a uniform web of dry fibers, comprising: a fiber distributor including a housing having a bottom outlet opening; driven impellers in said housing adjacent said opening; means defining a tunnel extending beneath said opening, in air flow communication therewith; a forming wire disposed beneath said opening, and mounted for unidirectional travel through said tunnel; means for sealing the ends of said tunnel against air leakage while accommodating the recited travel of said forming wire; means for producing a vacuum below said forming wire; a screen mounted for unidirectional travel over said bottom outlet opening and above said tunnel, said last recited travel being in the direction of travel of said forming wire, that portion of the screen traveling over said opening being the sole portion thereof confronting said forming wire; and means for introducing dry fibers to said distributor housing for discharge from said bottom outlet opening,

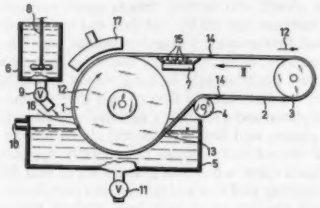


under the influence of said impellers, through said screen onto said forming wire as said screen and said forming wire travel, respectively, above and through said tunnel.

4,212,608
METHOD AND APPARATUS FOR THE PRODUCTION OF MOLD BODIES

Chatty Rao, Bergisch Gladbach, and Bruno Schmitz, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,695
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731831
Int. Cl.[2] B29C *1/00, 25/00*
U.S. Cl. 425—85 6 Claims



1. An apparatus for the production of molded bodies comprising:

a container for holding a slurry,

a rotatable suction drum partly immersed in said slurry,

an endless molding belt trained about said drum comprising a plurality of individual molding cavities open at both ends, and

a roller device capable of agitating and classifying the molded bodies formed on said belt and positioned below said belt to receive molded bodies as they drop from said cavities.

4,212,609
METHOD AND APPARATUS FOR PRODUCING SHAPED AND SIZED FOOD ARTICLES

Rudolph J. Fay, 6911 Wildflower Trail, Cincinnati, Ohio 45200

Filed May 17, 1978, Ser. No. 906,452
Int. Cl.[2] A21C *11/00;* A22C *7/00;* B29C *3/02*
U.S. Cl. 425—100 16 Claims

1. A machine for producing configurated products comprising:

a rotary die roll having an open interior and cavities ar-

ranged in a series of circumferential rows, the cavities of the circumferential rows being aligned in columns longitudinally of the roll,

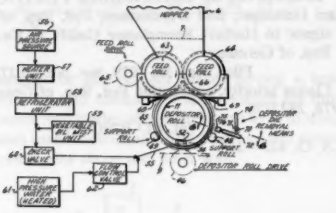
movable dies disposed in each of said cavities, said dies being made from a porous material,

means for introducing said product into said die cavities,

means for ejecting said product from said cavities, said ejection means comprising

means for moving said dies outwardly in said cavities until the outer surfaces of said dies are approximately flush with the surface of said roll, and

gas supply means including longitudinal passages in said die roll for supplying gas at a regulated pressure through said passages in said die roll to the underside of



said porous dies and outwardly through said porous dies as said dies are moved outwardly in said die cavities, said gas being operable to eject said product from said dies and to prevent said product from sticking to and clogging the pores of said porous dies, said gas supply means including a port plate sequentially connectable with said longitudinal passages during rotation of said die roll, conduit means connecting said gas supply means to said port plate, and

means including control valve means for selectively directing high temperature, high pressure water to said port plate and to said passages during rotation of said die roll so as to clean said passages and cavities of product contained therein.

4,212,610

DEVICE USED IN FIXING WITH A CASTING MATERIAL A SLEEVE INSERT HAVING A TERMINAL FLANGE

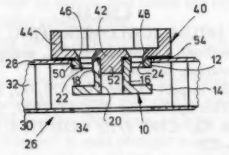
Dieter H. Weidlich, Frankfurt am Main, and Willy Brückner, Donauwörth, both of Fed. Rep. of Germany, assignors to Camloc Fastener GmbH, Kelkheim, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,640

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750829

Int. Cl.² E04B *2/38*; B29C *27/00*

U.S. Cl. 425—110 **10 Claims**



1. For use in setting and sealing a threaded member in a recess in a laminar composite board-like member by injecting casting material into the recess and around the threaded member disposed therein, the threaded member having a flange-like head intended to be secured in or closely adjacent the recess opening in the outer surface of the board-like member, a body portion for extending from the flange-like head into the recess, a threaded bore extending through the flange-like head into the body portion, and charging and venting openings in the flange-like head for communicating with the interior of the recess; a setting device comprising a plate-like body of larger diameter than the recess opening and having charging and venting openings corresponding to those of the threaded member such that the plate-like body can be intimately applied with its underside against the flange-like head of the threaded member with the respective charging and venting openings in alignment, a cylindrical non-threaded member projecting centrally from the underside of said plate-like body for frictional detachable engagement in the threaded bore of the threaded member, and an upstanding collar on the upper side of said plate-like body surrounding the charging and venting openings therein and forming a bowl-like container thereabout to hold any casting material issuing from either of the openings after injection through said charging opening into the interior of the recess, said collar having at least one pair of opposed flattenings on its periphery for application of a wrench, whereby said setting device can be coupled with a threaded member, the threaded member can then be mounted with clearance in a recess in a composite board-like member, casting material can be injected through the charging opening to harden in the recess around the threaded member, with any excess casting material issuing from the venting opening being contained within the bowl-like container formed by said upstanding collar, the setting device can be rotated by a wrench to shear off casting material in the charging opening or the venting opening between the plate-like body and the flange-like head, and the setting device can be removed from the set and sealed threaded member.

4,212,611

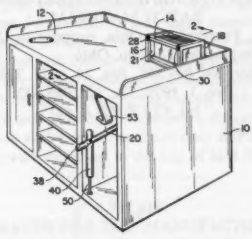
APPARATUS FOR FORMING INDIVIDUAL SERVING PORTIONS OF A FROZEN DAIRY CONFECTION

Max B. Hughes, Rte. A, Clear Lake Riviera, Lower Lake, Calif. 95457

Filed Nov. 20, 1978, Ser. No. 962,364

Int. Cl.² A23P *1/00*

U.S. Cl. 425—114 **12 Claims**



1. An apparatus for forming, from a block of frozen dairy confection, individual serving portions, the apparatus comprising:

a die defining a plurality of apertures;

means for retaining said die in a generally horizontal fixed position;

means for moving the block through said die;

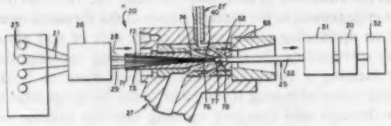
a lever arm adapted for rotational movement about an axis between its ends, said lever arm having one end pivotally connected to said block moving means and the other end pivotally connected to said retaining means; and

means connected to said lever arm for controlling the rate of rotation of said lever arm so as to move said block moving means toward said die, and thereby to move a block through said die whereby the individual serving portions exit the apertures defined by said die.

4,212,612
APPARATUS FOR ENCLOSING A PLURALITY OF CONDUCTORS IN A PARTITIONED JACKET

George F. Piper, Baltimore; William C. Vesperman, Bel Air, and Max K. Wilson, Cockeysville, all of Md., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 943,425, Sep. 15, 1978. This application Jul. 5, 1979, Ser. No. 55,129
Int. Cl.[2] B29F *3/10*
U.S. Cl. 425—114 5 Claims



1. An apparatus for enclosing at least two groups of insulated conductors, which are disposed in a planar array, in a common, substantially symmetrical jacket, said apparatus comprising:

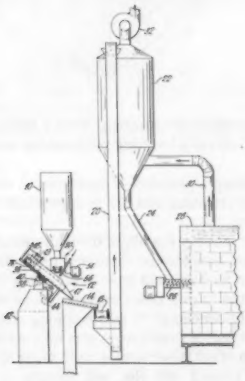
means for causing at least two groups of individually insulated conductors which are disposed in a planar array to be moved in adjacent paths along at least an exit portion of which the groups are spaced apart a predetermined distance and then for causing the groups to be moved along converging paths in which each group of conductors is capable of being moved within the array; and

means for flowing a plastic material about the array to enclose it in a jacket and between the groups to achieve an equilibration of pressure in the plastic material about each group and control lateral movement of the groups of conductors within the array while forming a web between the groups which is integral with the jacket and which may vary along the length of the array to compensate for conductor size variations, said means being effective to cause the web which separates the groups in the jacketed array to have a thickness which is substantially less than said predetermined distance.

4,212,613
APPARATUS FOR HANDLING HEAT-SOFTENABLE BATCH MATERIAL

Stephen Seng, Frazeysburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 809,595, Jun. 24, 1977. This application Dec. 1, 1978, Ser. No. 965,632
Int. Cl.[2] B28B *17/00*
U.S. Cl. 425—141 10 Claims

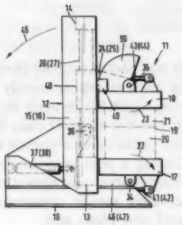


1. In an apparatus for pelletizing a batch of particulate material, said apparatus comprising pellet forming means having a movable surface comprising a slanted rotatable member, means for moving said surface, means for supplying particulate batch material to said pellet forming means, means for supplying liquid to said pellet forming means, said apparatus being so arranged and constructed that said liquid and particulate batch material combine to form pelletized batch material, the improvement comprising means for directly sensing the depth of the batch material on said pellet forming means, and means for changing the ratio of the liquid to the particulate material in response to a change in the depth which is sensed.

4,212,614
DISC BRAKE HOLDING DEVICE FOR PIVOTAL ELEMENTS OF EXPANDABLE PLASTICS MOLDS

Karl Holzinger, Bad Oeynhausen, Fed. Rep. of Germany, assignor to Herbert Kanngiesser GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,372
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822178
Int. Cl.[2] B29C *1/00*
U.S. Cl. 425—214 4 Claims



1. An apparatus for molding shaped articles from expandable plastics such as polyurethane, including a base support (**10**), a mold holder (**11**) mounted to the support for pivotal movement about a first axis (**36**), a pair of clamping plates (**17, 18**) mounted to the mold holder for pivotal movement about respective second and third axes (**34, 35**), said plates being disposed opposite each other and one above the other when said mold holder is in a vertical position, a pair of mating mold parts (**20, 21**) individually mounted to said clamping plates, means (**28, 29**) for moving one of said plates toward and away from the other plate, and a special holding device for locking one of the clamping plates or the mold holder to prevent any undesired movement thereof, characterized by:

the special holding device comprising a controllably energizable disc brake unit (**49**) cooperably mounted with respect to a brake disc (**50**).

4,212,615
ROTARY DRUM AGGLOMERATING APPARATUS

Earl W. Bennethum, Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 672,373, Mar. 31, 1976, abandoned. This application Sep. 13, 1977, Ser. No. 832,841
Int. Cl.[2] C10B *1/10;* C22B *1/16, 1/216*
U.S. Cl. 425—222 6 Claims

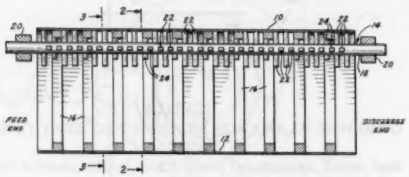
1. Agglomerating apparatus to control the size of carbonaceous material formed into agglomerates in a drum, comprising:

(a) a drum rotatable about a central axis thereof, an exposed inner wall of said drum uniformly spaced from said axis throughout the length of said drum, and feed and discharge means for introducing and removing material therefrom,

(b) a plurality of raised annular ribs affixed to said inner wall,

(c) a rotating shaft extending into said drum, and offset from said central axis of said drum,

(d) a plurality of scraper blades projecting from said shaft, where a predetermined number of said scraper blades are of a given length and adapted to scrape accumulated carbonaceous material from said inner wall of said drum when said drum and shaft are rotated, and



(e) the remainder of said scraper blades having a lesser length, whereby said blades of a lesser length are interposed between said blades of a given length so as to scrape accumulated carbonaceous material from the top portion of said annular ribs about said inner wall.

4,212,616

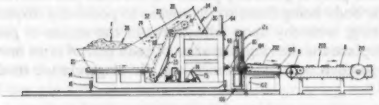
APPARATUS FOR FORMING BOARDS FROM PLANT FIBERS

Sydney E. Tilby, Victoria, Canada, assignor to Intercane Systems, Inc., Windsor, Canada

Filed Aug. 10, 1978, Ser. No. 932,545

Int. Cl.[2] A01N 9/00

U.S. Cl. 425—256 **18 Claims**



1. Apparatus for forming plant fibers into boards comprising:

means for delivering plant fibers in random orientation, said fibers bearing a binder substance;

means for compressing and reorienting said fibers for forming slugs thereof in which said fibers are oriented in substantially parallel relationship;

chamber forming means forming a plurality of chambers for receiving and compressing the slugs;

means for discharging a plurality of said slugs one at a time for said slug forming means into one of said chambers;

said discharging means including plunger means which enters said chamber as said plunger means pushes a slug thereinto, to compress each slug as said slug is inserted into said chamber; and

means for sequentially aligning said chambers with said discharging means so that said discharging means successively fills each chamber with slugs, said binder substance being solidified in each chamber as the slugs in each chamber are compressed by said chamber forming means to bond the binder substance and fibers within each chamber to form a board of unified fibers within each chamber.

4,212,617

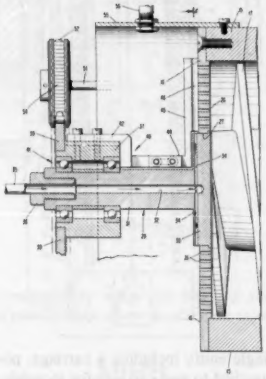
APPARATUS FOR PRODUCING A FLOW OF SHORT CHEESE STRANDS

Henry J. Bagdan, Rutherford, N.J., and William A. Blain, Spring Valley, N.Y., assignors to Nabisco, Inc., East Hanover, N.J.

Filed Apr. 30, 1979, Ser. No. 34,581

Int. Cl.[2] A01J 27/00, 25/15

U.S. Cl. 425—311 **9 Claims**



1. Apparatus for producing a continuous flow of short strands of cheese comprising in combination an extruder having a dieplate formed with a plurality of die aperatures arranged in an annular band for extruding cheese in a plurality of individual strands, a formation positioned centrally with respect to said dieplate and extending away from said extruder, said formation being provided with a plurality of air nozzles spaced about the periphery thereof, each nozzle being directed outwardly adjacent to said dieplate and across said band of aperatures, air passageway means extending through said formation to said nozzles, means for connecting a source of pressurized air to said passageway means whereby air streams issue from said nozzles to case harden the cheese strands, a knife member, means for mounting said knife member in contact with said dieplate for movement along said annular band to periodically sever said cheese strands to produce short strand pieces, conveyor means positioned beneath said extruder to catch said pieces, and means for directing said pieces downwardly toward said conveyor including a downwardly facing hood positioned at the end of said extruder and a downwardly directed air nozzle mounted in the top of said hood.

4,212,618

APPARATUS FOR THE MANUFACTURE OF TRANSVERSELY CONTOURED TUBING FROM THERMOPLASTIC MATERIAL

Wilhelm Hegler, Goethestrasse 2, (D–8730), Bad Kissingen, Fed. Rep. of Germany and Ralph-Peter Hegler, Bad Kissingen, Fed. Rep. of Germany, assignors to Wilhelm Hegler, Bad Kissingen, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,417

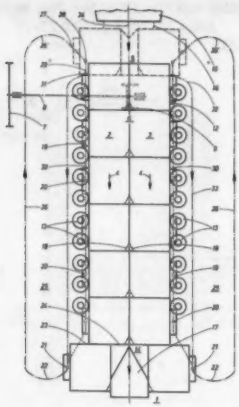
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832350

Int. Cl.[2] B29C 17/07; B29D 7/22

U.S. Cl. 425—326.1 **21 Claims**

1. In an apparatus for the manufacture of tubing from a thermoplastic material comprising an extrusion nozzle which supplies a tube of thermoplastic material in a plastic state, a mold train in facing relationship to said extrusion nozzle, which mold train comprises at least two pairs of cooperating mold halves, means for moving said pair of mold halves along a straight molding run, first transfer means for separating said

mold halves, return means for returning the separated mold halves along separate return runs to a position facing the nozzle and second transfer means for re-joining said separated mold halves, and wherein the improvement comprises that said first transfer means, said second transfer means and said return



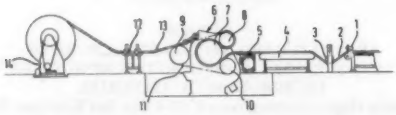
means are a single entity including a carriage, pivotable arm means being attached to said carriage for movably supporting a gripper for releasable attachment to one of said mold halves, there being provided means to cause the continuous motion of said gripper from one end of said molding run to the other.

4,212,619

PLANT FOR CURING CONVEYOR BELTS AND THE LIKE

Giovanni Ballocci, Monza, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy

Filed Sep. 29, 1978, Ser. No. 947,189
Claims priority, application Italy, Sep. 30, 1977, 28127 A/77
Int. Cl.[2] B29H *3/00, 7/22;* B29D *29/00*
U.S. Cl. 425—373 **2 Claims**



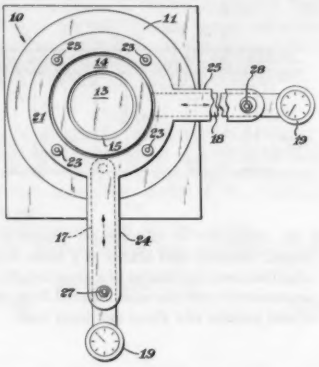
1. A plant for vulcanizing ribbon-like elements comprising:
a continuous curing machine of the type having a rotating drum;
a device for continuously feeding an uncured ribbon-like element to the curing machine; and
a tensioning device between said curing machine and said device, said tensioning device provided with at least one conveyor belt contacting the uncured ribbon-like element in a single flat plane, said conveyor belt travelling at a speed different from that of the continuous curing machine whereby the proper tension and the uniform advancement of the uncured ribbon-like element are obtained.

4,212,620

TUBE EXTRUSION DIE

John W. McLaren, Beaverton, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 3, 1978, Ser. No. 921,683
Int. Cl.[2] B29F *4/03*
U.S. Cl. 425—381 **6 Claims**



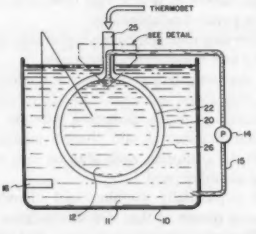
1. In a tubing extrusion die, the die having a die body, a mandrel, a die ring, the die ring in combination with the mandrel and the die body defining a generally annular extrusion passageway, the annular extrusion passageway connecting with a material inlet disposed at a first end of the die, the annular passageway terminating at a discharge or second end of the die in an annular extrusion orifice, the improvement which comprises slideably affixing the die ring to the die body, the die ring having at least two arms extending in a plane which is generally normal to the axis of the annular passageway, each said arm having a terminal end remote from the die ring which is fitted to a means to positively displace the die ring, the die body having at least two arms fixed thereto and extending generally parallel to the arms of the die ring to form at least two pairs of generally parallel arms, each said arm fixed to the die body being fitted to the means to positively displace the die ring, whereby upon adjustment of the means to positively displace the die ring, the arms of each pair of arms move relative to each other to position the die ring relative to the mandrel.

4,212,621

BLADDER MOLDING

Paul E. Michelotti, 59 Bob Hill Rd., Ridgefield, Conn. 06877

Filed Jun. 21, 1979, Ser. No. 50,827
Int. Cl.[2] B29G *7/00*
U.S. Cl. 425—405 H **5 Claims**



1. A device for molding large scale containers of thermosetting plastics comprising a molding tank filled with a fluid of a given specific gravity; a first outer bladder positioned within

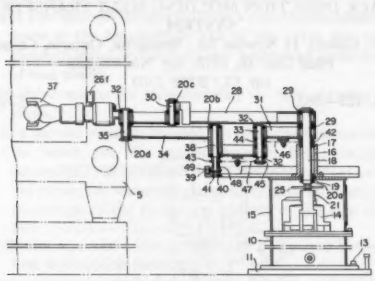
said molding tank; a second inner bladder within said outer bladder and spaced from said outer bladder; means for filling said inner bladder with a fluid of said given specific gravity; means for filling the space between said outer and said inner bladder with a thermosetting plastic of said given density.

4,212,622

PRODUCT TAKE OUT DEVICES FOR USE IN MOLDING MACHINES

Tsuyoshi Kikuchi, Atsugi, and Kiyoshi Takusagawa, Zama, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,793
Claims priority, application Japan, May 9, 1978, 53/54790
Int. Cl.[2] B29C 7/00
U.S. Cl. 425—444 **4 Claims**



1. A product take out device for use in a molding machine, comprising a four arm link mechanism including four arms which are connected together by four pins, one of which pins is used as a stationary point of said link mechanism, a chuck operatively connected to one of said pins diagonally opposite said one pin used as a stationary point for grasping and taking out a product from a mold of said molding machine, a drive shaft provided for one of said arms, means for driving said drive shaft thereby swinging said four arm link mechanism about said stationary point, and guide means for controlling the locus of movement of said drive shaft.

4,212,623

APPARATUS FOR COOLING PLASTIC INJECTION MOLD DIES

Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.

Division of Ser. No. 892,592, Apr. 3, 1978, Pat. No. 4,151,243.
This application Jan. 31, 1979, Ser. No. 7,864
Int. Cl.[2] B29F 1/08
U.S. Cl. 425—547 **9 Claims**

1. A mold having a mold cavity for producing plastic injection articles comprising a movable die and a stationary die, means forming a portion of a cooling passageway in one die, means forming a portion of a cooling passageway in the other die, said passageways being so formed and positioned to effect

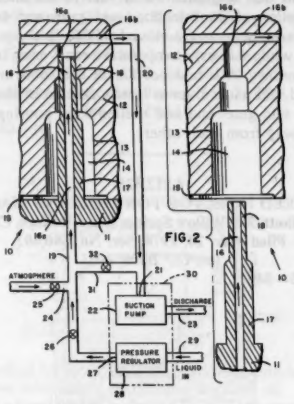


FIG. 2

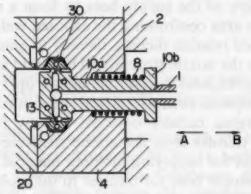
a continuous passageway when the dies are abutting and a discontinuous passageway when the dies are separated.

4,212,624

HOT-RUNNER MOLD AND INJECTION MOLDING METHOD MAKING USE OF THE SAME

Nobuo Ando; Isao Satou, and Kazuo Maehara, all of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1978, Ser. No. 913,295
Claims priority, application Japan, Dec. 9, 1976, 51-148060
Int. Cl.[2] B29F 1/08
U.S. Cl. 425—548 **23 Claims**



1. A hot-runner mold comprising:

a hot-runner block having means for maintaining a predetermined high temperature of said hot-running block, a molten resin supply port, gates and molten resin passages through which said gates are communicated with said molten resin supply port;

a cavity block having a contact surface which is contacted by said gates and having means for maintaining a predetermined low temperature of said cavity block and molding cavities having respective molten resin pouring ports; and

a gate-temperature recovering block positioned within said cavity block such that a portion of its surface lies in the same plane as said contact surface of said cavity block, said gate-temperature recovery block having a heating means disposed therein, said heating means being capable of maintaining a higher temperature than the temperature of said cavity block, said gate temperature recovery block functioning to recover a predetermined high temperature at said gates, upon contacting the portion of said hot-runner block around said gates;

wherein said hot-runner block and said cavity block are movable relative to each other such that, at least during

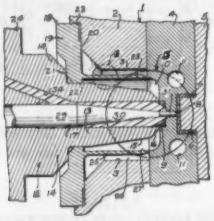
the injection, said gates of said hot-runner block and said molten resin pouring ports of said cavity block are brought into alignment with each other and, after the completion of the injection, said gates and said molten resin pouring ports are moved relatively away from each other, while said gate-temperature recovering block is put into contact with said portion of said hot-runner block around said gates, over at least a portion of the period in which said gates and said molten resin pouring ports are kept away from each other.

4,212,625

HIGH SPEED INJECTOR FOR MOLDING MACHINES

George V. Shutt, 918 Willow Springs La., Glendora, Calif. 91740

Filed Mar. 14, 1978, Ser. No. 886,407
Int. Cl.[2] B29F *1/03*
U.S. Cl. 425—549 4 Claims



1. A molding machine comprising:
a. a mold unit having a mold cavity, means for cooling the mold cavity, an exposed wall surface, and an entrance bore intersecting the exposed wall surface and the mold cavity;
b. a heated nozzle structure having a supply bore and an external surface tapering into close proximity to the periphery of the supply bore to form a nozzle tip of minimum area confronting the exposed wall surface in closely spaced relation thereto, thereby to minimize heat transfer from the nozzle structure to the mold unit and avoid axial compressional load on the nozzle tip;
c. the tapered external surface and confronting wall surface diverging radially outward thereby further minimizing heat transfer from the nozzle structure to the mold unit;
d. means for supplying molding material in a fluid state to the supply bore for transfer to the mold cavity;
e. the extremity of the supply bore forming with the contiguous portion of the wall surface a zone entrapping sufficient molding material to form an internal transistion surface merging into the surface of the entrance bore;
f. the closely spaced relation between the wall surface and the nozzle tip permiting limited discharge of molding material between the diverging end surfaces of the nozzle structure and confronting wall surface while maintaining a seal.

3. A molding machine, comprising:
a. a supporting plate having at least one clearance chamber extending therethrough;
b. a pair of mold plates disposed in mutual contact and defining at least one mold cavity having an access bore exposed to an end of the clearance chamber;
c. a thin wall temperature transfer reducing sleeve extending through the clearance chamber in spaced relation to the walls thereof to form a radially outer and radially inner insulating chambers;

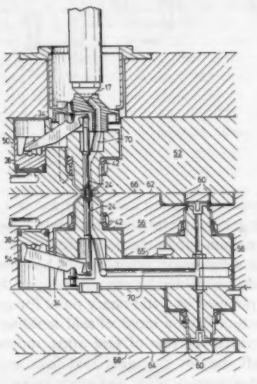
4. A high speed injection molding machine, comprising:
a. an injection mold unit having a mold cavity, circulation passages for temperature transferring fluid, a wall surface, and an entrance bore intersecting the wall surface and the mold cavity;
b. a nozzle structure having a supply bore for discharge of molding material, in a fluid state, and a conical end portion converging toward the supply bore to form therewith a discharge end of approximately zero wall thickness;
c. the discharge end being in contiguous spaced relation to the wall surface of the mold unit for delivery of the molding material to the entrance bore of the mold unit, the spacing being sufficiently large to permit passage of molding material to form a seal;
d. a wall surrounding the nozzle structure and forming therewith an annular insulating chamber increasing in radial dimension toward the discharge end of the nozzle structure;
e. the discharge end portion of the nozzle structure and adjacent wall surface within the boundaries of the supply bore defining an annular entrapment zone for receiving a preselected quantity of molding material forming a heat transfer shield; and
f. a shut-off pin having a tip dimensioned to fit the access bore, the pin being movable between a first position permitting flow of the molding material into the mold cavity and a second position closing the access bore.

4,212,626

STACK INJECTION MOLDING MELT TRANSFER SYSTEM

Jobst U. Gellert, 11 Newton Rd., Brampton, Ontario, Canada

Filed Dec. 18, 1978, Ser. No. 970,388
Int. Cl.[2] B29F *1/05*
U.S. Cl. 425—562 3 Claims

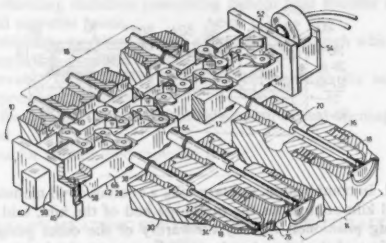


1. Stack injection molding apparatus for conducting pressurized melt to a moveable platen which is actuated between an open and a closed position comprising:
(a) a first melt flow control valve unit securely located in a stationary platen, said first flow control valve unit having a molding machine inlet and a first controlled gates, said molding machine inlet and said first controlled gate being connected by a first runner passage, and
(b) a second melt flow control valve unit securely located in the moveable platen, said second flow control valve unit having a second controlled gate and a second runner passage extending from said second controlled gate, said second flow control valve unit being located in said moveable platen in a position wherein said first and second controlled gates are in conducting communication when the moveable platen is in the closed position,
said flow control valve units being actuated to open and then close both of said gates while the moveable platen is in the closed position to provide a flow of pressurized melt from the first runner passage to the second runner passage.

4,212,627
INJECTION MOLDING VALVE PIN ACTUATOR MECHANISM

Jobst U. Gellert, 11 Newton Rd., Brampton, Ontario, Canada

Filed Dec. 14, 1978, Ser. No. 969,345
Claims priority, application Canada, Dec. 8, 1978, 317614
Int. Cl.[2] B29F *1/05*
U.S. Cl. 425—564 7 Claims



1. Mechanism for actuating at least one injection molding valve pin along its longitudinal axis comprising;

(a) a first member reciprocable in a plane substantially transverse to the longitudinal axis of the valve pin, said first member being secured against substantial movement out of said plane,

(b) drive means for reciprocating the first member in said plane,

(c) a second member located between the first member and the valve pin, the second member being reciprocable substantially in the direction of the longitudinal axis of the valve pin, but secured against substantial movement in the directions of the reciprocal motion of the first member, and

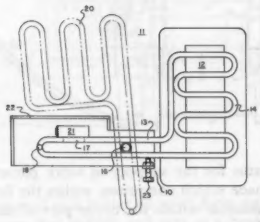
(d) first connector means operably connected between the first and second members;

whereby movement of the first member in said plane moves the second member which makes bearing contact with the vale pin and actuates it along its longitudinal axis

4,212,628
RECOVERY FURNACE SAFETY SYSTEM

William H. Boatwright, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,330
Int. Cl.[2] F27D *7/02, 9/00*
U.S. Cl. 432—4 12 Claims



6. A pulp mill recovery furnace safety appliance comprising:

Barrier means having a mounting bar portion projecting from a liquor spray gun aperture blocking portion;

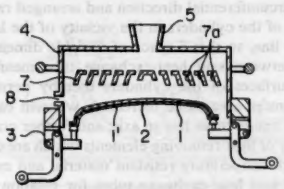
Pivot means in said bar portion secured to recovery furnace structure adjacent said aperture for pivoting said barrier means to and from an aperture blocking position; and

Electrical switch means secured proximate of said barrier means for actuation between closed and open contact conditions by positionment of said barrier means at spray gun aperture blocking and open positions, respectively.

4,212,629
APPARATUS AND METHOD FOR LOCAL FORCED HEATING OF AN AUTO BODY

Yasumasa Nagasaka, Okazaki; Kenichi Sekiyama, and Yasushi Masuyama, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 12, 1978, Ser. No. 923,911
Claims priority, application Japan, Nov. 8, 1977, 52-133910
Int. Cl.[2] F24J *3/00*
U.S. Cl. 432—10 5 Claims



4. A method for local heating of a moving auto body to joint at least two steel plates, comprising the steps of:

placing a hood whose periphery follows the contours of said auto body to minimize the escape of hot air, over a joint of the steel plates which has built up with plastic solder and moving said hood with said auto body;

sending hot air from a hot air blast nozzle axially removably positioned adjacent one side of said hood through a hot air intake located at the center of the hood top;

uniformly diffusing the hot air sent into the hood by passing said hot air over a stream-rectifying plate equipped with a plurality of blades to uniformly diffuse the hot air over the plastic solder built up on the joint of the steel plates;

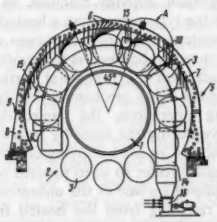
uniformly heating the joint of steel plates with the hot air thus uniformly diffused, thereby to heat and harden said plastic solder; and

discharging the used hot air through a discharge hole located on the hood wall downstream from said stream-rectifying plate.

4,212,630
APPARATUS FOR REMOVING HEAT FROM CYLINDERS OF THE ROTARY KILN RECUPERATOR COOLER

Leonid T. Vorobeichikov, prospekt Gagarina, 80, kv. 132; Boris F. Fedoryakin, ulitsa Dzerzhinskogo, 46, kv. 11, both of Kharkov; Grigory K. Panchenko, ulitsa Gruzinova, 55, Bakhchisarai Krymskoi oblasti; Grigory N. Gorbanev, ulitsa Gagarina, 3, kv. 85, Bakhchisarai Krymskoi oblasti; Anatoly N. Bevz, ulitsa I. Strelnikova, 6, Bakhchisarai Krymskoi oblasti, and Vladimir I. Satarin, prospekt Lenina, 29a, kv. 16, Kharkov, all of U.S.S.R.

Filed Jul. 25, 1978, Ser. No. 927,878
Int. Cl.[2] F27B *7/38;* F27D *15/02*
U.S. Cl. 432—80 2 Claims



1. An apparatus for removing heat from a rotary kiln recuperator cooler having an axis and a plurality of cylinders

which have outer surfaces and are arranged circumferentially about the axis, the apparatus comprising:

at least two substantially bow-shaped stationary support members spaced from one another in an exial direction and each having a lateral surface which faces toward a lateral surface of the other support member;

a plurality of heat-exchange tube means through which a coolant is adapted to circulate, said tube means being fixed to said lateral surfaces of said support members such that said tube means are spaced from each other in a substantially circumferential direction and arranged radially outwardly of the cylinders in the vicinity of the latter along a wave line, so that a space of variable dimension is defined between said heat-exchange tube means and the outer surfaces of the cylinders thereby permitting the heat-transfer area to be increased, wherein each of said heat-exchange tubes has an axis; and further comprising a plurality of heat-removing elements which are constituted of a high-temperature resistant material and mounted on each of said heat-exchange tubes for rotation about the axis of the same tube so as to be periodically brought into contact with the outer surfaces of the cylinders.

4,212,631
TONER FUSING ARRANGEMENT

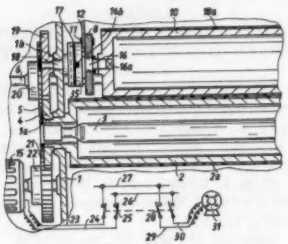
Walter Franke, Bad Aibling, and Ottmar Wolf, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,326

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747544

Int. Cl.[2] H05B 3/10; G03G 15/20

U.S. Cl. 432—60 **8 Claims**



1. In a xerographic copying machine, an improved fusing arrangement of the type comprising a heated fusing roller and an unheated counterpressure roller between which copy paper bearing toner images to be fused is transported with the toner image in contact with the peripheral surface of the heated fusing roller and a drive mechanism for driving the rollers during copying operations, the improvement comprising means, operative during the stand-by intervals during which the copying machine awaits a copying command, for rotating the counterpressure roller so as to prevent non-uniform heating of the peripheral surface of the unheated counterpressure roller by heat radiating from the heated fusing roller, said means including an auxiliary drive separate from said drive mechanism and serving to steadily rotate said counterpressure roller at a rotary speed lower than the speed at which the counterpressure roller is rotated during copying operations.

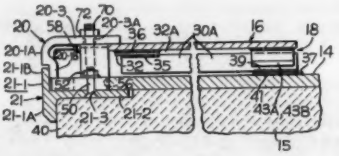
4,212,632
COOLING ARRANGEMENT FOR ROTARY KILN

Ralph M. Conrad, and Robert M. Bliemeister, both of Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 2, 1979, Ser. No. 35,406

Int. Cl.[2] F27B 7/24

U.S. Cl. 432—115 **11 Claims**



1. In combination, a rotary kiln, a cooling cowl mounted on said kiln contiguous the discharge end of the kiln, said cowl being positioned radially outwardly of the outer peripheral surface of the kiln whereby to define an annulus between the inner peripheral surface of said cowl and the outer peripheral surface of said kiln through which cooling air can flow to cool the discharge end of said kiln, means supported by said kiln contiguous the discharge end of said kiln for forming an axial end closure for said annulus, a plurality of spacer bars made of a flexible material and positioned in the annulus between said cowl and said kiln, said spacer bars extending in a direction substantially parallel to the axis of rotation of said kiln and being angularly spaced apart from each other, the respective spacer bars being fixedly secured at one end thereof only to said cowl and at the opposite end thereof only to said kiln.

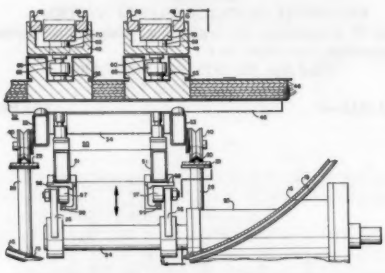
4,212,633
VACUUM ELECTRIC FURNACE

Benjamin A. Kreider, Richboro, and William J. Metalsky, Warminster, both of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Nov. 16, 1978, Ser. No. 961,298

Int. Cl.[2] F27B 9/14

U.S. Cl. 432—122 **13 Claims**



1. Apparatus for the support of work pieces in a vacuum electric furnace which comprises, within the furnace tank:

heating elements within the upper part of said tank to provide a heated zone,

fixedly mounted spaced parallel work supporting rails of a material resistant to the temperatures in said heated zone,

a stationary frame disposed below said rails,

supporting members for said rails extending upwardly from said stationary frame,

shielding members interposed between said rails and said stationary frame for preventing radiant heat transmission from said heated zone to said stationary frame,

means for cooling said stationary frame,

means for advancing work pieces along said rails,

said last means comprising
work piece supports movable to positions above and below said rails and longitudinally with respect thereto for elevating work pieces above said rails for advancing movement with respect to said rails, and
a second frame movable with respect to said stationary frame for positioning said work piece supports and having supporting pins for said work piece supports extending upwardly therefrom,
said shielding members preventing radiant heat transfer to said movable frame,
said shielding members include a fixed shield through which supporting members extend, and
a movable shield having openings therethrough for said supporting members,
said fixed shield being in shielding relation to said openings, and
means for cooling said movable frame.

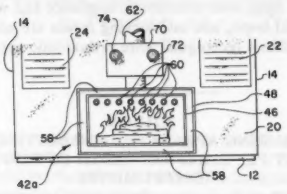
4,212,634

AUXILIARY HEATING SYSTEM FOR A BULK TOBACCO BARN

John D. Mitchell, Lewiston, and J. C. Sessoms, Jr., Ahoskie, both of N.C., assignors to Harrington Manufacturing Company, Lewiston, N.C.

Filed Jun. 5, 1978, Ser. No. 912,335
Int. Cl.[2] F27B *17/00*; A24B *1/02*
U.S. Cl. 432—186 **9 Claims**

1. In a bulk tobacco curing and drying structure having a generally enclosed drying area, means for supporting tobacco in bulk form in said drying area, and a forced air heating system including fan means for generating and circulating a system of air through the tobacco material supported within said drying area and thermostatically controlled heating means for heating the circulated air to effectuate curing and drying of the tobacco material within the structure, the improvement comprising an auxiliary heating system for supplying heat to said system of air to assist in the curing and drying of the tobacco within said drying area, said auxiliary heating system comprising: a heater having a fire box for receiving wood, coal and other burnable material; an outer wall structure surrounding a



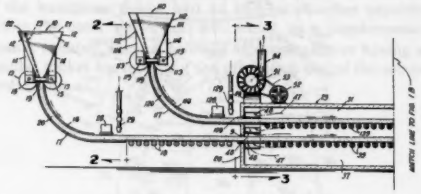
substantial portion of said heater so as to form an air passing area therebetween that defines and acts as a heat exchanger when air is moved therethrough; means for directing a portion of air from said system of air being circulated through said structure to said heater and through the heat exchanger disposed about said fire box and back to the system of circulating air moving through the curing and drying structure; and temperature control means operatively associated with said heater and responsive to the temperature within said curing and drying structure for controlling the heat output of said heater and the auxiliary heating system.

4,212,635

PROCESS AND APPARATUS FOR PRODUCING CELLULATED VITREOUS REFRACTORY MATERIAL IN PRESCRIBED SHAPES AND PRODUCTS THEREFROM

John W. North, 3467 Pierce Dr., NE., Chamblee, Ga. 30341

Continuation-in-part of Ser. No. 888,507, Mar. 20, 1978. This application Jun. 7, 1978, Ser. No. 913,395
Int. Cl.[2] F27D *3/00*
U.S. Cl. 432—239 **11 Claims**



7. An apparatus for feeding raw material as a ribbon in a horizontal direction comprising:
(a) a hopper for said raw material, said hopper having an opening in its bottom portion, a pair of spaced transversally opposed compression rollers, the inner peripheries of which are disposed on opposite sides of said opening for engaging on opposite sides and compressing therebetween and progressively feeding said raw material as a stream downwardly;
(b) a third compression roller below said one of said opposed compression rollers, and guide means for guiding a surface of said stream from the other of said opposed compression rollers to the upper periphery to said third compression roller;
(c) said opposed compression rollers compacting and feeding said raw material from said hopper into a stream fed in a downward direction; and
(d) said third compression roller and said one of said opposed compression rollers cooperating to compact and feed said stream as a ribbon of indeterminate length in a horizontal direction.

4,212,636

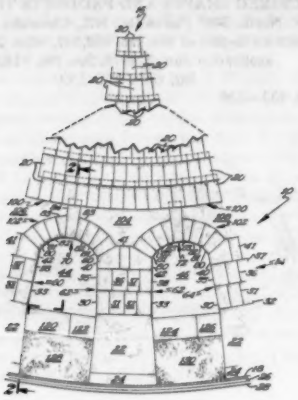
HEARTH STRUCTURE

Archibald W. Pavlak, 1476 Highview Ave., Eagan, Minn. 55121

Filed Sep. 11, 1978, Ser. No. 941,190
Int. Cl.[2] F27D *1/18*
U.S. Cl. 432—250 **10 Claims**

2. In a incinerator structure including at least one hearth extending from an outer wall towards the center of the incinerator and having at least one drop hole formed in the hearth adjacent the outer wall, with the hearth having a main body of fire brick extending from the center of the incinerator and joining the drop hole area of the hearth, the improvement in the drop hole area of the hearth, comprising: weight supporting projection means extending from the outer wall; at least two side projections of standard size fire brick extending out from and supported by the weight supporting projection means to allow for the desired size of drop hole and forming the sides of the drop hole; generally horizontal closure member of standard size fire brick between the side projections to close the drop hole between the two side projections, with part of

the closure member arranged to support the main body of the hearth, wherein the entire hearth may be constructed from



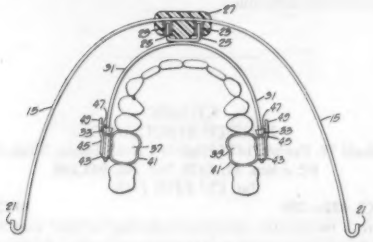
standard size fire brick and eliminate the necessity of special shapes of fire brick.

4,212,637

ORTHODONTIC FACE BOW

Harry L. Dougherty, 14434 Hamlin St., Van Nuys, Calif. 91401, and William W. Beazley, 5400 Balboa Blvd., Encino, both of Calif. 91316

Filed Jan. 23, 1976, Ser. No. 651,686
Int. Cl.[2] A61C *3/00*
U.S. Cl. 433—5 **8 Claims**



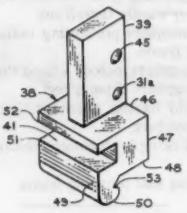
1. An orthodontic face bow comprising:
(a) inner bow means,
(b) outer bow means, and
(c) coupling means having first means rigidly connected to said outer bow means and second means rigidly connected to said inner bow means, said first and second means being separably interconnected, said first and second means nonpivotally securely abutting against each other when force is applied to the ends of said outer bow means in a first direction, and readily disconnecting when force is applied to said outer bow means in a second direction.

4,212,638

CONVERTIBLE LIGHT WIRE-RECTANGULAR WIRE ORTHODONTIC APPLIANCE SYSTEM

Marcel Korn, 502 Lindell Ave., Leominster, Mass. 01453

Filed Nov. 9, 1978, Ser. No. 958,959
Int. Cl.[2] A61C *3/00*
U.S. Cl. 433—8 **16 Claims**



1. A convertible light wire-rectangular wire orthodontic appliance system adapted for use with an archwire comprising:
A. A bracket adapted to be attached to a tooth, (and receive an archwire in) said bracket having a channel extending horizontally across the upper surface of said bracket in the mesial-distal direction, said channel being open onto said upper surface and adapted to receive an archwire, said bracket having lock pin-insert receiving means adapted to receive either a lock pin (and) or an insert;
B. a lock pin, said lock pin being adapted to be positioned in said lock pin-insert receiving means and adapted to secure an archwire in said channel when said bracket and lock pin are used in the light wire, orthodontic treatment method;
C. an insert, said insert having an archwire receiving slot extending generally horizontally across said insert in the mesial-distal direction and open onto the buccal or labial surface of said insert, said insert being adapted to be positioned in said lock pin-insert receiving means when said bracket and said insert are used in the rectangular wire orthodontic treatment method;
D. locking means for detachably mounting said insert to said bracket;
wherein said bracket and said lock pin are adapted to be assembled into a light wire orthodontic appliance and wherein said bracket, said insert, and said locking means are adapted to be assembled into a rectangular wire orthodontic appliance.

4,212,639

MEASURING APPARATUS FOR SETTING THE CORRECT PENETRATION DEPTH OF ROOT CANAL INSTRUMENTS

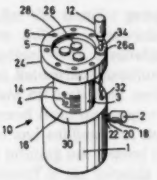
Alfred Schaffner, Breganzona, Switzerland, assignor to Polydent SA, Lugano, Switzerland

Filed Nov. 6, 1978, Ser. No. 958,096
Claims priority, application Switzerland, Nov. 17, 1977, 14217/77
Int. Cl.[2] A61G *1/14*; A61C *5/02*
U.S. Cl. 433—72 **6 Claims**

1. A measuring device for setting the correct depth of penetration of root canal instruments with stoppers, comprising:
a lower base portion having a top face and a central bore;
an upper portion received in the central bore of and telescopically movable with respect to the lower base portion, said upper portion including a plate member having an upper face, a plurality of holes arranged in said plate member in confronting relation with the top face of the lower base portion for receiving the root canal instruments;

means for releasably fixing said upper and lower portions to one another such that the upper face of the plate member is located at a distance from the top face of the lower base portion;

scale means provided on said upper portion for selectively setting the distance between said top face and upper face



at a predetermined spacing corresponding to the intended depth of penetration of a root canal instrument;

said plate member having recess means for receiving the stoppers used with the root canal instruments, whereby said stoppers can be stored in said recess means and sterilized together with the measuring device.

4,212,640

DENTAL HANDPIECE

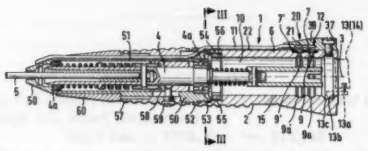
Hans Logé, Biberach an der Riss; Eugen Eibofner; Bernhard Kuhn, both of Biberach, and Heinrich Reich, Hochdorf, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 22, 1977, Ser. No. 854,015

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653588

Int. Cl.[2] A61C *1/10*

U.S. Cl. 433—82 **27 Claims**



1. A dental handpiece comprising: a handpiece sleeve; a drive shaft extending axially of said sleeve and connectable in use to a dental instrument at one end of the handpiece to drive the instrument; a first coolant supply line provided for the handpiece; a coolant duct provided in the wall of said sleeve and communicating at an inner end with said first coolant supply line, said inner end being located to face the interior of the sleeve; and a second coolant supply line communicating with an opposite outer end of said coolant duct and extending towards said one end of the handpiece; said coolant duct being a generally rectilinear duct extending generally radially between said inner and said outer end of the duct; said second coolant supply line being releasably connected to said outer end of the coolant duct at a location in the wall of said handpiece sleeve which permits manipulation externally of the handpiece to connect together and to release the connection between said second coolant supply line and said outer end of the coolant duct; and a closure member at the handpiece sleeve which is accessible from the exterior and which covers-over said location of the releasable connection, said closure member being arranged to be releasable for making said location accessible; the handpiece sleeve being surrounded by an outer sleeve adapted to be fixed upon it; the second coolant line having a portion projecting in a direction away from the instrument end of the handpiece sleeve into an annular chamber provided within the outer sleeve and into which, as a supplementary closure member, there is screwed an annular cover having an annular socket for receiving the projecting end of the second coolant line.

4,212,641

DENTAL HANDPIECE

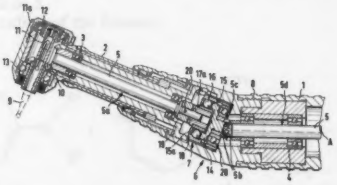
Eugen Eibofner, Biberach, and Heinrich Reich, Hochdorf, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,639

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644458

Int. Cl.[2] A61C *1/12*

U.S. Cl. 433—133 **7 Claims**



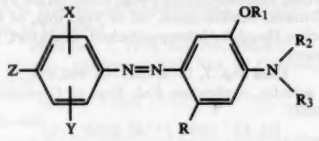
1. A dental handpiece comprising: a holding sleeve; a head sleeve inclined to the holding sleeve at an obtuse angle and adapted to mount a dental instrument; a connecting zone providing an interconnection between said holding sleeve and said head sleeve; a drive shaft arranged in said holding sleeve; a drive shaft arranged in said head sleeve; and a ball-type planetary transmission arranged in the connecting zone wholly immediately adjacent to a bisector of said obtuse angle formed between axes of said head sleeve and of said holding sleeve in a straight portion of said head sleeve, said planetary transmission providing a drive-transmitting connection between said drive shaft and said driven shaft; said drive shaft comprising first shaft portion arranged in said holding sleeve, a second shaft portion arranged in said connecting zone, said second shaft portion comprising a driven portion of a rotary-drive transmitting coupling arranged to couple said first and second shaft portions together, said second shaft portion being part of said ball-type planetary transmission and being arranged coaxially with said driven shaft in said head sleeve.

4,212,642
TRANSFER PRINTING DYES

Angelo Della Casa, Basel, and Urs Karlen, Magden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jul. 20, 1978, Ser. No. 926,404
Claims priority, application Switzerland, Jul. 25, 1977, 9181/77
Int. Cl.² D06P 5/20
U.S. Cl. 8—470 8 Claims

1. In the process for the transfer printing of flat-surface structure of synthetic polymer materials which comprises bringing a support printed with a suitable printing ink into close contact with the flat-surface structure to be printed and applying heat, pressure or both heat and pressure to cause dyestuff to be transferred from the support to the flat-surface structure by diffusion and sublimation, the improvement according to which the printing ink printed on the support comprises at least one dyestuff of the formula



wherein

X represents hydrogen, halogen, or a lower alkylsulphone group,

Y represents hydrogen, chlorine, bromine, nitro, cyano, or an alkyl group of 1 to 4 carbon atoms,

Z represents hydrogen, chlorine, nitro, an acylamino group, or a lower alkylsulphonyl group,

R represents an alkyl radical of 1 to 4 carbon atoms, and

R_1, R_2 and R_3, each independently of the other, represent an alkyl radical of 1 to 4 carbon atoms, a cycloalkyl radical of 5 to 7 carbon atoms, an aralkyl or an aryl radical

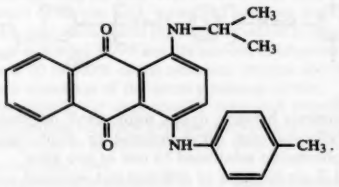
and the flat-surface structure is composed of synthetic polymer material having affinity for the thus transferred dyestuff.

4,212,643
TRANSFER DYE

Hans P. Kölliker, Münchenstein, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jun. 1, 1978, Ser. No. 911,958
Claims priority, application Switzerland, Jun. 8, 1977, 7049/77
Int. Cl.² C09D 11/02
U.S. Cl. 8—470 2 Claims

1. In the method for the dry tranfer printing of textile material which comprises contacting the material to be printed with the printed side of a printed transfer carrier support and subjecting the carrier support to heating while in contact with the said material to effect transfer of dyestuff from the carrier support to the said material, the improvement according to which the printed transfer carrier support carries a print comprising a dyestuff of the formula

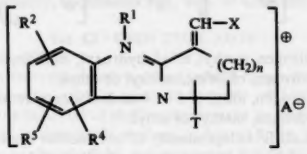


4,212,644
DYED PAPER

Hans-Juergen Degen, Lorsch, and Klaus Grychtol, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,947
Claims priority, application Fed. Rep. of Germany, July 25, 1977, 2733468
Int. Cl.² D21H 1/46
U.S. Cl. 8—506 11 Claims

1. Paper dyed with a compound of the formula



where

R^1 is alkyl of 1 to 12 carbon atoms, alkyl of 2 to 4 carbon atoms which may be substituted by hydroxyl, alkoxy of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms, carbamoyl, cyano, chlorine or bromine, benzyl, which is unsubstituted or substituted by methyl, methoxy, ethoxy or chlorine, or phenylethyl,

R^2 is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms, methoxy, ethoxy, nitro, amino, alkylamino, dialkylamino, where alkyl is of 1 to 4 carbon atoms, or alkanoylamino, where alkanoyl is of 1 to 4 carbon atoms,

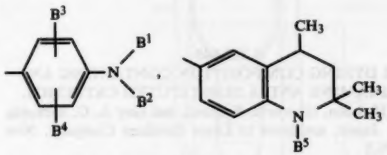
R^3 is hydrogen, chlorine or alkyl of 1 to 4 carbon atoms,

R^4 is hydrogen, chlorine or alkyl of 1 to 4 carbon atoms,

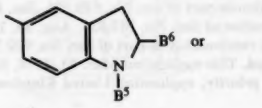
T is hydrogen or alkyl of 1 to 4 carbon atoms,

n is 1, 2 or 3,

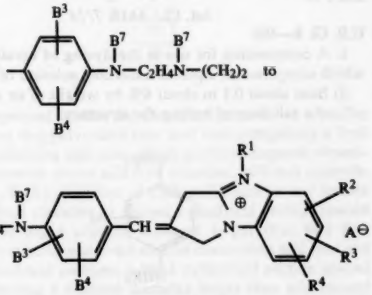
X is a radical of the formula



or

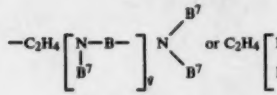


to

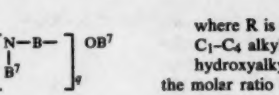


B^1 and B^2 independently of one another are alkyl of 1 to 8 carbon atoms, alkyl of 2 to 4 carbon atoms which is substituted by trialkylammonium, where alkyl is of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine, cyano, alkanoyloxy of 1 to 8 carbon atoms, alkoxycarbonyl, where alkoxy is of 1 to 8 carbon atoms, al-

kylaminocarbonyloxy, where alkyl is of 1 to 4 carbon atoms, or alkanoylamino, where alkanoyl is of 1 to 4 carbon atoms, allyl, cyclohexyl, benzyl which is unsubstituted or substituted by methyl or methoxy, phenylethyl, phenyl which is unsubstituted or substituted by methyl, methoxy or chlorine, or a radical of the formula



or



B^3 is hydrogen, methyl, ethyl, hydroxyl, methoxy or ethoxy,
B^4 is hydrogen, chlorine, methyl or ethyl,
B^5 is hydrogen, alkyl of 1 to 4 carbon atoms or benzyl,
B^6 is hydrogen, methyl or ethyl,
the radicals B^7 independently of one another are hydrogen, alkyl of 1 to 4 carbon atoms, or alkyl of 2 or 3 carbon atoms substituted by hydroxyl or alkoxy of 1 to 4 carbon atoms

is pyrrolidino, piperidino, morpholino, piperazino, N-methylpiperazino or N-β-hydroxyethylpiperazino,
B is straight-chain or branched C_2 to C_6 alkylene,
q is 0, 1, 2 or 3 and
$A^{\ominus}$ is an anion.

4,212,645

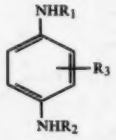
HAIR DYEING COMPOSITION CONTAINING AN ARYLDIAMINE AND A SUBSTITUTED CATECHOL

Nicholas H. Leon, Isleworth, England, and Guy A. G. Ricketts, Tokyo, Japan, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 870,151, Jan. 17, 1978, which is a continuation of Ser. No. 717,831, Aug. 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 539,760, Jan. 9, 1975, abandoned. This application Mar. 13, 1978, Ser. No. 885,705
Claims priority, application United Kingdom, Jan. 18, 1974, 2507/74
Int. Cl.[2] A61K *7/13*
U.S. Cl. 8—406 **5 Claims**

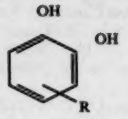
1. A composition for use in the dyeing of keratinous fibres which comprises an aqueous anaerobic solution of

(i) from about 0.1 to about 6% by weight of an aryldiamine or a salt thereof having the structure



where R_1 and R_2 are selected from the group consisting of hydrogen, C_1–C_4 alkyl and C_1–C_4 alkoxy, and where R_3 is selected from the group consisting of C_1–C_4 alkyl and C_1–C_4 alkoxy; and

(ii) from about 0.1 to about 6% by weight of a substituted catechol having the structure



where R is selected from the group consisting of amino, C_1–C_4 alkylamino, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 hydroxyalkyl, C_1–C_4 aminoalkyl and C_1–C_4 alkoxyalkyl, the molar ratio of aryldiamine to substituted catechol in the solution being from about 1:8 to about 4:1.

4,212,646

PROCESS FOR THE PRINTING OF MIXED FABRICS OF POLYESTER AND CELLULOSE FIBERS

Horst Curtius, Kelkheim; Erich Feess, Hofheim am Taunus, and Willy Gronen, Schöllkrippen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,483
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740587
Int. Cl.[2] C09B *27/00*; D06P *1/02*
U.S. Cl. 8—532 **9 Claims**

1. A process for the printing of textile mixed fabrics of polyester and cellulose fibers, which comprises printing on the fabric a printing paste containing coupling components dissolved in an alkaline medium, sodium nitrite and diazotizable primary aromatic amines as a solution or in the form of an aqueous fine dispersion with a particle size of less than 0.03 mm and which are practically non-volatile at drying temperatures and show a minimum basicity with a pKa of at least 2.2, drying the fabric, treating the printed fabric at room temperature with an aqueous developing bath containing 10 to 100 g/l of 85% formic acid to develope the azo dyestuffs by diazotizing the amines and coupling any diazonium compounds formed with the coupling components, and heat-treating the fabric to complete the coupling and fixation of azo dyestuffs formed simultaneously on the polyester fiber portion with high temperature steam for 3 to 10 minutes at a temperature in the range of 170° to 190° C.

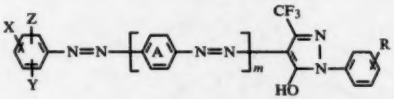
4,212,647

WATER-INSOLUBLE AZO DYESTUFFS WHICH ARE DERIVATIVES OF 1-ARYL-3-TRIFLUOROMETHYL-5-PYRAZOLONES

Jacques A. N. Bernardin, Deuil La Barre, and Jacques P. E. Pechmeze, Paris, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 749,865, Dec. 13, 1976, abandoned. This application Sep. 7, 1978, Ser. No. 940,401
Claims priority, application France, Dec. 17, 1975, 75 38615
Int. Cl.[2] C09B *29/38*
U.S. Cl. 8—662 **12 Claims**

1. A dyestuff of the formula:



wherein

X represents halogen, cyano, nitro, alkyl, polyfluoroalkyl, polyfluoroalkoxy, alkylsulphonyl or sulphonamido, or sulphonamido substituted by one or two alkyl,

Y and Z are the same or different and represent hydrogen, halogen, cyano, nitro, alkyl, polyfluoroalkyl, poly-

fluoroalkoxy, alkylsulphonyl, sulphonamido or sulphonamido substituted by one or two alkyl,

R represents hydrogen, halogen, cyano, nitro, alkyl, alkoxy, polyfluoroalkyl, polyfluoroalkoxy, alkylsulphonyl, sulphonamido or sulphonamido substituted by one or two alkyl;

m is equal to 0 or 1,

and the nucleus A may be substituted by one or more atoms of chlorine or alkyl, alkoxy or acetylamino,

halogen being chlorine or bromine and the alkyl, alkoxy, polyfluoroalkyl, polyfluoroalkoxy and alkylsulphonyl groups containing 1 or 2 carbon atoms.

4,212,648

PROCESS FOR THE PRINTING OF CELLULOSE FIBER FABRICS

Horst Curtius, Kelkheim; Erich Feess, Hofheim am Taunus, and Willy Gronen, Schöllkrippen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,400

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740679

Int. Cl.[2] C09B *27/00*; D06P *1/02*

U.S. Cl. 8—466 **2 Claims**

1. A process for the printing of textile cellulose fiber fabrics, in which printing pastes containing coupling components, dissolved in an alkaline medium, sodium nitrite and diazotizable primary aromatic amines are printed on said fabrics, allowed to dry and thereafter the water-insoluble azo dyestuffs are developed on the fibers by diazotizing the amines and coupling the diazonium compounds formed with the coupling components, which comprises developing azo dyestuffs from an amine in a solution or in the form of aqueous fine dispersions wherein the amine has a particle size of less than 0.03 mm, said amines being practically non-volatile under the drying temperatures and showing a minimum basicity degree as measured by pK_α of 2.2 or more, said developing being effected so as to give the azo dyestuffs, following the drying of a printing paste applied by a treatment of a printed fabric, at room temperature, with an aqueous developing bath containing formic acid in an amount corresponding to 10 to 100 g/l of an 85% formic acid, and thereafter completing the coupling without a previous intermediate drying of the fabric, by a passage through a steamer for 3 to 20 seconds, at a temperature in the range of from 100° to 130° C.

4,212,649

METHOD FOR MANUFACTURING HEAT-RESISTANT AND FLAME-RETARDANT SYNTHETIC FIBER

Ichiro Sakurada, Kyoto; Toshio Okada, Kadoma, and Kanako Kaji, Osaka, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Aug. 26, 1977, Ser. No. 828,202

Claims priority, application Japan, Mar. 1, 1977, 52-20906

Int. Cl.[2] D06M *10/00, 15/38*

U.S. Cl. 8—115.5 **14 Claims**

1. A method for manufacturing heat-resistant and flame-retardant polyvinyl chloride fiber which is characterized in comprising successive steps of

(a_1) impregnating the polyvinyl chloride fiber with a ternary mixture of acrylic acid, water and ethylene dichloride in such a composition that the volume ratio of acrylic acid to water is at least 30/70 and the amount of ethylene dichloride is 90 to 100% of the minimum amount above which phase separation of the ternary mixture occurs,

(b_1) irradiating the impregnated polyvinyl chloride fiber with ionizing radiation to cause graft-copolymerization of acrylic acid in an amount at least 15% by weight of the starting fiber, and

(c_1) subjecting the grafted fiber to a heat treatment or converting the graft-copolymerized acrylic acid to a salt of a divalent metal by contacting the grafter fiber with an aqueous solution of a water-soluble divalent metal salt.

4,212,650

DIAGNOSTIC PROCESS

Hartwig W. Bauer, Heidenheim, and Wolfgang Ax, Marburg an der Lahn, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,011

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750521

Int. Cl.[2] G01N *27/26, 33/16*

U.S. Cl. 23—230 B **11 Claims**

1. An in vitro diagnostic method, which comprises incubating lymphocytes with a synthetic peptide of high basicity whereby the behavior of the lymphocytes in an electric field is modified in a detectable manner, subjecting the incubation mixture to an electric field, and measuring the migration speed of the lymphocytes in the electric field.

4,212,651

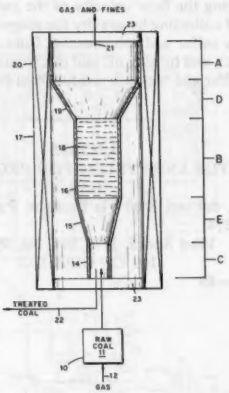
HIGH GRADIENT MAGNETIC BENEFICIATION OF DRY PULVERIZED COAL VIA UPWARDLY DIRECTED RECIRCULATING FLUIDIZATION

David M. Eissenberg, Oak Ridge, Tenn., and Yin-An Liu, Opelika, Ala., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,875

Int. Cl.[2] C10L *9/10*; B03C *1/00*

U.S. Cl. 44—1 SR **8 Claims**



1. An improved system for the efficient removal of sulfur and ash from dry pulverized raw feed coal comprising a feed chamber containing said coal; a high gradient magnetic separation unit mounted above said feed chamber, said unit comprising a first cylindrical section of a selected diameter and spaced from said feed chamber, a second cylindrical section spaced from and having a selected diameter larger than said first section, a first hollow tapered section connecting said first and second cylindrical sections, a third cylindrical section spaced from and having a selected diameter larger than said second section, a second hollow tapered section connecting said second and third cylindrical sections, an iron-clad solenoidal magnet equipped with a movable pair of pole pieces encompassing said cylindrical and hollow tapered sections and adapted to be connected to a power supply, a matrix of magnetic packing material mounted within the interior of said second cylindrical section; and a source of feed gas connected

to said feed chamber and adapted to be fed thereto at a selected flow velocity for effecting the air-transportation of said feed coal upwardly into said separation unit for a predetermined time, whereby in the operation of said system during said time, the fines and a portion of said feed gas are collected as a top product out from the top of said third cylindrical section, a sufficient retention time for the efficient removal of magnetic particles from said coal is effected inside of said second cylindrical section to the bulk of the fluidized coal stream due to the gradual decrease in the upward fluidization velocity of the coal stream effected by the expanded sections from the bottom to the top of said separation unit thereby effecting a substantial capturing and retention of the magnetic particles in said coal by said matrix, and after said time has expired said flow velocity of said feed gas is adapted to be reduced thus allowing the magnetically beneficiated coal of low sulfur and ash content to be removed from said unit by gravity as a clean coal product after which the magnetic field is adapted to be cut off and the high-sulfur and high-ash residue collected as a waste product from said matrix.

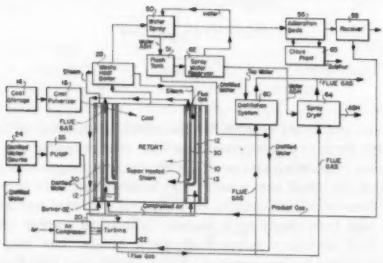
6. An improved method for the efficient removal of sulfur and ash from dry pulverized raw feed coal comprising the steps of feeding a gas through a coal feed chamber to provide a fluidized stream of said feed coal at a selected flow velocity and for a predetermined time upwardly into an iron-clad solenoidal magnetic separation unit equipped with a movable pair of pole pieces and provided with three expanded hollow sections from the bottom to the top thereof with the central section containing a magnetic packing material therewithin, said expanded sections providing a gradual decrease in the upward fluidization velocity of the pulverized coal stream to provide a sufficient retention time within said separation unit to effect a substantial capturing and retention of the magnetic particles in said coal by said matrix, collecting the fines and a portion of said gas out of the top of said unit as a top product during said time, reducing the flow velocity of the gas after said time has expired and collecting by gravity the magnetically beneficiated coal of low sulfur and ash contents from said unit as a clean coal product, and turning off said electromagnet and collecting the high-sulfur and high-ash residue from said matrix as a waste product.

4,212,652

APPARATUS AND SYSTEM FOR PRODUCING COAL GAS

Anthony A. duPont, 2300 Via Pacheco, Palos Verdes Estates, Calif. 90274

Filed Apr. 5, 1978, Ser. No. 893,715
Int. Cl.[2] C10B *3/02*
U.S. Cl. 48—89 **5 Claims**



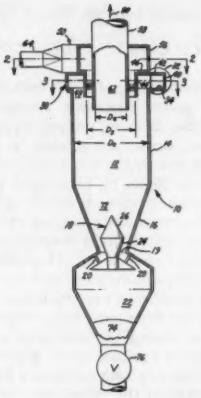
1. Apparatus for producing a gas at a relatively high pressure comprising: a retort having a central reaction column and having an outlet for hot gas produced by the reaction column; means for introducing a pulverized carbon-containing fuel into the reaction column; means for introducing pressurized steam into the central reaction column to react therein with the pulverized fuel to produce the high pressure gas; wall means forming a tapered chamber surrounding said reaction column in coaxial relationship therewith said tapered chamber diminishes in area toward the top so as to achieve uniform heat transfer thereof; burner means coupled to said tapered chamber; compressor means for producing air at relatively high pressure; means for introducing compressed air from said compressor means into said tapered chamber; and means for introducing combustible gas into the tapered chamber to be burned by said burner means so as to produce pressurized hog flue gas passing through the tapered chamber at a high velocity to provide sufficient convective heat transfer to produce enough heat radiation into the central reaction column to react the carbon in the pulverized fuel with steam.

4,212,653

PROCESS AND APPARATUS FOR SEPARATING PARTICULATE MATTER FROM GASEOUS MEDIA

Walter B. Giles, Glenville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 27, 1978, Ser. No. 919,460
Int. Cl.[2] B01D *45/16*
U.S. Cl. 55—1 **9 Claims**



1. In a process for separating particulate matter from a contaminated gaseous medium containing said particulate matter therein, comprising:

(A) passing said contaminated gaseous medium through a first swirl-inducing zone to form a swirling contaminated gaseous medium,

(B) introducing said swirling contaminated gaseous medium into a cyclonic separation zone via a path adjacent an inner surface of a wall defining a periphery of said separation zone to separate at least a portion of said particulate matter from said swirling contaminated gaseous medium and form a gaseous product which is at least partially depleted in said particulate matter, and

(C) removing said gaseous product from said separation zone through a gaseous exhaust flow zone disposed radially inwardly of said first swirl-inducing zone,

the improvement for increasing separation efficiency, which comprises:

(D) passing a substantially contaminant-free gaseous medium through a second swirl-inducing zone to form a co-swirling substantially contaminant-free gaseous medium,

(E) introducing said co-swirling gaseous medium into said separation zone through an introduction zone disposed radially inwardly of said swirling contaminated gaseous medium and radially outwardly of said exhaust flow zone, and

(F) employing an additional wall to separate said introduction zone from the so-introduced swirling contaminated

gaseous medium, said additional wall extending into said separation zone, said exhaust flow zone extending into said separation zone further than said additional wall so extends, such that separation of the introduced co-swirling contaminated gaseous medium from the introduced swirling substantially contaminant-free gaseous medium is terminated before the swirling contaminated gaseous medium has passed said exhaust flow zone.

7. In an apparatus for separating particulate matter from a contaminated gaseous medium containing said particulate matter therein, comprising:

(A) means for passing said contaminated gaseous medium through a first swirl-inducing chamber to form a swirling contaminated gaseous medium,

(B) means for introducing said swirling contaminated gaseous medium into a cyclonic separation chamber via a path adjacent an inner surface of a wall defining a periphery of said separation chamber to separate at least a portion of said particulate matter from said swirling contaminated gaseous medium and form a gaseous product which is at least partially depleted in said particulate matter, and

(C) means for removing said gaseous product from said separation chamber through a gaseous exhaust flow conduit disposed radially inwardly of said first swirl-inducing chamber,

the improvement for increasing separation efficiency, which comprises:

(D) means for passing a substantially contaminant-free gaseous medium through a second swirl-inducing chamber to form a co-swirling substantially contaminant-free gaseous medium, and

(E) means for introducing said co-swirling gaseous medium into said separation chamber through an introduction chamber disposed radially inwardly of said swirling contaminated gaseous medium and radially outwardly of said exhaust flow conduit,

and wherein:

(a) said introduction chamber is an annular chamber defined by the outer surface of said exhaust conduit and an additional wall disposed intermediate said outer surface of said exhaust conduit and the inner surface of the wall defining said periphery of said separation chamber, and

(b) said exhaust conduit extends into said separation chamber further than said additional wall so extends.

4,212,654

CENTRIFUGAL WET GAS SCRUBBING METHOD AND APPARATUS

Guy C. Caraway, deceased, late of Downey, Calif., and by Virginia M. Caraway, executrix, 9703 Wiley Burke Ave., Downey, Calif. 90240

Continuation of Ser. No. 786,105, Apr. 11, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,415

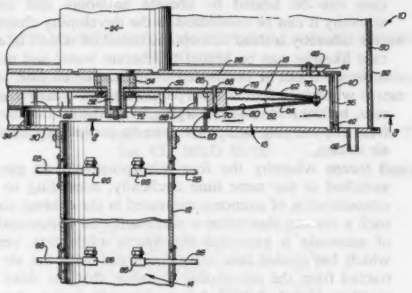
Int. Cl.² B01D *47/06*

U.S. Cl. 55—91 **7 Claims**

1. A gas scrubbing method, including the steps of:

(a) uniformly wetting the gas to be scrubbed with water vapor to a relative humidity of substantially 100%; and

(b) centrifugally compressing the wetted gas in an enclosed rotating structure, including impinging the water vapor on a screen in the rotating structure, to a density many times atmospheric to condense and extract therefrom at



least part of the water vapor and contaminants in the gas which are contacted by the water vapor.

4,212,655

ARRANGEMENT FOR AMMONIA FEED IN COPYING EQUIPMENT

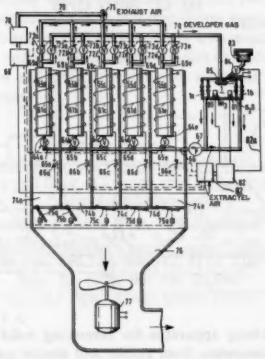
Karl-Heinz Degenhardt, Bad Schwalbach; Gerhard Marx, Taunusstein, and Hermann Frank, Niederwalluf, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 28, 1977, Ser. No. 846,311

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649294

Int. Cl.² B01D *53/06*

U.S. Cl. 55—181 **9 Claims**



1. In an arrangement for ammonia feed in copying equipment with at least four switchable adsorption vessels each containing an adsorbent, at least one adsorption vessel of which in each case, the adsorbent of which is not saturated with ammonia, is charged with ammonia-containing air extracted from a developing chamber before this air leaves the copying equipment as cleaned exhaust air, and at least one adsorption vessel of which after saturation of the adsorbent can be regenerated by heating, and means whereby the liberated ammonia can be fed to the developing chamber,

the improvement comprising means to connect the adsorption vessels to a line for the ammonia-containing air extracted from the developing chamber,

means to heat the individual adsorption vessels,

means to connect a gas outlet of each adsorption vessel to an exhaust line and to a line to the developing chamber,

means whereby a first adsorption vessel of which in each

case can be charged with the air extracted from the developing chamber,

means whereby a second adsorption vessel of which in each case can be heated to liberate ammonia and means whereby it can be connected to the developing chamber,

means whereby a third adsorption vessel of which in each case likewise can be heated to liberate water and means whereby it can be connected to an exhaust air line,

means whereby a fourth adsorption vessel of which in each case, before a renewed charging, with the air discharged from the copying equipment, can be cooled in a cooling air stream,

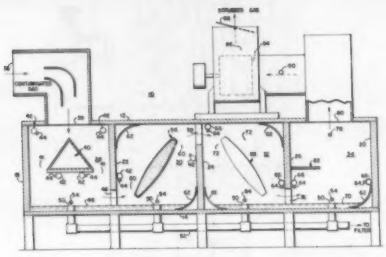
and means whereby the four adsorption vessels can be switched at the same time cyclically, according to the concentration of ammonia measured in the exhaust air, in such a manner that when a predetermined concentration of ammonia is exceeded the fourth adsorption vessel, which has cooled last, can be charged with the air extracted from the developing chamber, that the third adsorption vessel, heated last to liberate water, can be cooled, and the second adsorption vessel, heated last to drive out the ammonia, continues to be heatable but can be connected to the exhaust air line instead of the developing chamber, and the first adsorption vessel charged last with extracted air can be heated to drive out the ammonia and can be connected to the developing chamber, and wherein each adsorption vessel is located in a separate flow duct of a coolant, including means whereby each flow duct can be closed and can be connected to a common duct for the coolant, and including means in said common duct for circulating ambient air as said coolant.

4,212,656

SMOKE SCRUBBING APPARATUS

John G. Lube, 39 Springton Rd., Upper Darby, Pa. 19082

Filed Dec. 4, 1978, Ser. No. 966,004
Int. Cl.[2] B01D *45/08*
U.S. Cl. 55—217 **8 Claims**



8. A scrubbing apparatus for removing solid and soluble gaseous contaminents from smoke and similar gases comprising:

a housing including a top, a bottom, a front side and a rear side, a first end and a second end, said sides and said ends being placed essentially mutually perpendicular to each other and to said top and bottom, said housing being subdivided by a plurality of inner walls parallel to said ends and extending between said sides and substantially from said top to said bottom into;

a first chamber lying between the first end and a first internal wall and further comprising a contaminated gas inlet located in the top thereof, baffle means adapted to cooperate with said inlet to channel and direct said gas past a first steam spray means located beneath said inlet at an angle to said baffle means and then past a second spray means beneath said baffle, said spray being directed to be substantially perpendicular to the channeled gas flow whereby the gas is hydrated for scrubbing, and a first gas outlet in the bottom portion of said first internal wall;

a second chamber lying between the first internal wall, and a second internal wall, adapted to receive the hydrated gas from said first chamber and further comprising water cooled baffle means situated so as to direct said incoming gas past a third steam spray means which in turn are directed to impinge on said water cooled baffle means whereby a partial steam condensation and first scrubbing action occurs, said condensate flowing to the bottom of said chamber, a water filled sump in the bottom of said chamber extending between said sides and through said first gas outlet into said first chamber, said sump further comprising a water inlet for initial liquid charge and make up which is adapted to operate in said first and second chambers and through which the condensate is removed from said chambers while at the same time maintaining the sump water level, and a second gas outlet in the upper portion of said second internal wall through which the partially scrubbed gas exits;

a third chamber lying between said second internal wall, and a third internal wall including baffle means positioned and dimensioned therewithin to be a substantial mirror image of said water cooled baffle means; said third chamber being, adapted to receive the partially scrubbed gas from said second chamber and further comprising a first water quench means whereby the gas stream is cooled and the steam, hydrated solid contaminents and soluble gases are condensed and collected thus achieving a second scrubbing, said scrubbed condensate flowing along with said quench water to the bottom of said chamber, a drain in the bottom of said chamber to remove the quench water and condensate and a third gas outlet in the bottom of said third internal wall through which the cooled scrubbed gas stream is discharged;

a fourth chamber lying between said third internal wall and said second end, adapted to receive the cooled gas stream from said third chamber and further comprising a second quench water means adapted to perform a final scrubbing and cooling of said gas stream, a gas discharge in the top of said chamber from which the cooled cleaned gas exits the system, said discharge further comprising fan means and being constrictable by a variable damper contained therein so as to keep system gas velocity and pressure even, a third water quench means adapted to only operate when the temperature of the existing gas exceeds a preset level, cantilevered baffle means to prevent spray from the second and third quenches from being swept out of said gas outlet and a water filled sump in the bottom of said chamber extending between said sides and through said third gas outlet into said third chamber, said sump further comprising a water inlet for initial charge and makeup, which is adapted to cooperate with elevated drains in both the third and fourth chambers through which the contaminated condensate and quench water are removed from the system to maintain sump depth, and

filter means adapted to receive the discharges from said sumps and further adapted to separate said solid contamination and said drained discharges whereby said solids are removed and the quench water salvaged for reuse.

4,212,657

DEVICE FOR THE REMOVAL OF PARTICLES OF LEAD FROM THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Mario Urbinati, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

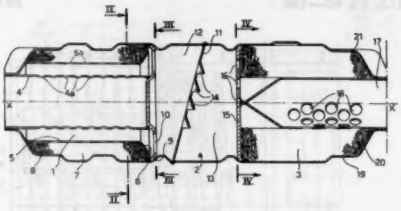
Filed Dec. 26, 1978, Ser. No. 973,293
Claims priority, application Italy, Jan. 16, 1978, 67069 A/78
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—319 **4 Claims**

1. A device for the removal of pollutant particles, particularly lead particles, from the exhaust gases of an internal combustion engine, comprising in combination:

a casing having internal subdivision means defining first,

second and third chambers aligned with each other, said second chamber communicating both with said first and third chambers through openings of said internal subdivision means and said first and third chambers being respectively provided with an exhaust gas inlet and an exhaust gas outlet, so that the exhaust gases can flow in succession through said first, second and third chambers,

a metallic filler within said first and third chambers for conglomerating and trapping some of the pollutant particles,



a partition extending across said second chamber in a plane inclined to a transverse plane orthogonal to the longitudinal axis of the device at an angle of between 10° and 20°, said partition having its upper half closer to said third chamber and its lower half closer to said first chamber and being provided with a plurality of apertures having downwardly deflecting louvres which have deflecting surfaces inclined to the plane of the partition at an angle of between 30° and 40°, so as to be adapted to deflect downwardly the flow of partially purified gases coming from the first chamber in order to close the deposition of pollutant particles in the bottom of the second chamber.

4,212,658

CONNECTION BETWEEN PARALLEL TUBULAR COMPONENTS OF A CYCLONE SEPARATOR

Roger Bessouat, Paris; Gerard Tondeur, Velizy Villacoublay; Patrick Talleu, Chatou, and Jean-Pierre Cerdan, Houilles, all of France, assignors to Stein Industrie, Paris and Electricite de France, Velizy Villacoublay, both of, France

Filed Jan. 24, 1979, Ser. No. 6,304

Claims priority, application France, Feb. 13, 1978, 78 03983

Int. Cl.² B01D *45/16*

U.S. Cl. 55—347 **5 Claims**

1. A connection, in a cyclone separator, between parallel tubular components of circular cross-section, said connection comprising:

a pre-cut inlet disc for fluid to be separated,

polygonal adaptors for said tubular components, said adaptors being welded to said inlet disc, and

a second disc, coplanar with said first disc and having a predetermined spacing therefrom, and having spaced circular holes therein through which tubular component portions having a circular cross-section project, with said second disc forming a spacer for said tubular component circular cross-section said predetermined spacing being sufficient to substantially eliminate virbration of said tubular components during the operation of said cyclone separator.

4,212,659

AIR-INTAKE DEVICES FOR INTERNAL COMBUSTION ENGINES

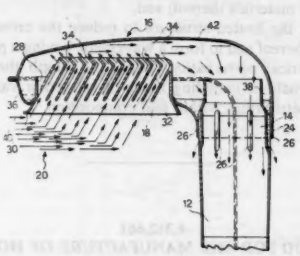
Guido Magrini, Brescia, Italy, assignor to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Dec. 7, 1978, Ser. No. 967,457

Claims priority, application Italy, Dec. 30, 1977, 69963 A/77

Int. Cl.² B01D *50/00*

U.S. Cl. 55—385 B **1 Claim**



1. An air-intake device for an internal combustion engine comprising a vertically disposed induction conduit, a hollow casing having first and second means defining downwardly opening spaced apart intake and outlet apertures, the upper end of said induction conduit being disposed in said outlet aperture in communication with the interior of said casing, a plurality of baffle plates mounted in said intake aperture and having downstream end portions within said casing directed away from said outlet aperture, first annular water trap means surrounding said intake aperture and second annular water trap means surrounding said upper end of said induction conduit extending into said outlet aperture and means for draining said first and second water trap means.

4,212,660

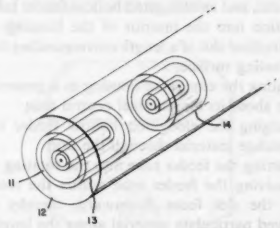
METHOD FOR MAKING MULTIPLE MODE WAVEGUIDE HAVING CYLINDRICAL PERTURBATIONS

Robert D. Maurer, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 824,152, Aug. 12, 1977. This application Mar. 22, 1979, Ser. No. 22,890

Int. Cl.² C03C *25/02*; C03D *37/02*

U.S. Cl. 65—3 A **3 Claims**



1. The method of forming an optical waveguide capable of propagating light in multiple modes with power coupling between selected modes comprising:

providing a solid substantially cylindrical starting member having a smooth outside peripheral surface;

applying a plurality of distinct and successive layers of par-

ticular materials to said smooth outside peripheral surface of said solid cylindrical member, each such distinct layer having a substantially uniform composition therethrough, but having a progressively different composition from the preceeding layer so as to form a structure having a stepped radially varying composition, the composition of each said layer forming one of the steps;

modifying the index of refraction of said composition along a plurality of axial distances, each of said axial distances being separated by sapces of composition having unmodified index of refraction;

heating the structure so formed to the drawing temperature of the materials thereof; and,

drawing the heated structure to reduce the cross-sectional area thereof and to form a waveguide having a plurality of cylindrical perturbations along the length thereof, said perturbations including index of refraction variations in concentric rings within said composition.

4,212,661

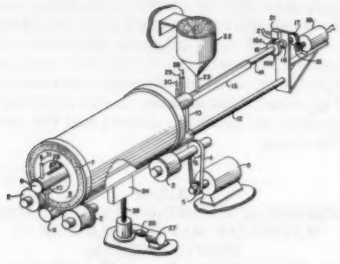
METHOD FOR THE MANUFACTURE OF HOLLOW FUSED QUARTZ OR FUSED SILICA INGOTS

Lothar Jung, 32 Lurline Dr., Millington, N.J. 07946

Division of Ser. No. 897,117, Apr. 17, 1978. This application Feb. 16, 1979, Ser. No. 12,706

Int. Cl.[2] C03B *3/00, 5/14*

U.S. Cl. 65—18 **15 Claims**



1. A method of manufacturing an ingot from a particulate ingot forming material, said method comprising:

(a) providing a rotatable elongated housing, having an inner surface serving as a casting surface for the particulate material, and an elongated hollow feeder tube adapted for insertion into the interior of the housing and having a longitudinal slot of a length corresponding to the length of the casting surface;

(b) rotating the elongated housing in a generally horizontal plane about its longitudinal central axis;

(c) charging the elongated hollow feeder tube with the particulate material through the slot;

(d) inserting the feeder tube into the rotating housing;

(e) revolving the feeder tube within the rotating housing until the slot faces downward, thereby dumping the charged particulate material along the length of the casting surface, the dumped particulate material adhering to the interior wall of the rotating housing by centrifugal force;

(f) heating the particulate material clinging to the interior wall of the housing as it is rotated to the top of the housing to melt the particulate material; and

(g) cooling the melt to solidify and removing the solidified melt as the ingot.

4,212,662

METHOD OF HEATING GLASS SHEETS FOR CONVEYING

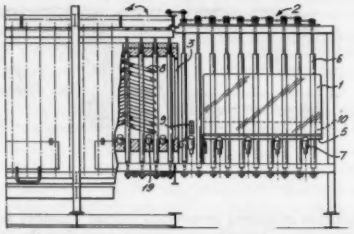
Paul A. Brereton, Moseley, and Roger Challis, Northfield, both of England, assignors to Triplex Safety Glass Company Limited, Birmingham, England

Filed Jan. 2, 1979, Ser. No. 426

Claims priority, application United Kingdom, Jan. 12, 1978, 1275/78

Int. Cl.[2] C03B *23/02*

U.S. Cl. 65—106 **10 Claims**



1. In a method of advancing a glass sheet through contact of a conveyor therewith, the improvement comprising:

heating a peripheral zone of the glass sheet at a rate to differentially heat said peripheral zone relative to the central area of the glass sheet to bend the sheet to a stable anticlastic shape in which said sheet is arched away from the conveyor transversely of the direction of advance of the sheet and in which said sheet has a reverse curvature along the direction of its advance whereby the leading and trailing edges of the sheet are bent away from the conveyor.

8. In a method of advancing a glass sheet through contact of a conveyor therewith, the improvement comprising:

cooling a central area of the glass sheet at a rate to differentially cool said central area relative to a peripheral zone of the sheet to bend the sheet to a stable anticlastic shape in which said sheet is arched away from the conveyor transversely of the direction of advance of the sheet and in which said sheet has a reverse curvature along the direction of its advance whereby the leading and trailing edges of the sheet are bent away from the conveyor.

4,212,663

REACTANTS DELIVERY SYSTEM FOR OPTICAL WAVEGUIDE MANUFACTURING

Mohd A. Aslami, Dhahran, Saudi Arabia, assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 801,659, May 31, 1977, abandoned. This application Jan. 26, 1978, Ser. No. 872,619

Int. Cl.[2] C23C *13/12*; C03B *19/06*

U.S. Cl. 65—144 **21 Claims**

9. Apparatus for forming an optical waveguide blank having a radially varying index of refraction, comprising:

vapor deposition means for receiving at least one source material vapor entrained in a carrier gas and directing said vapor towrd a starting member;

means for rotatably disposing a substantially cylindrical starting member in proximity to said vapor deposition means for accumulating source material from said deposition means;

a reservoir for retaining a quantity of the source material in liquid form;

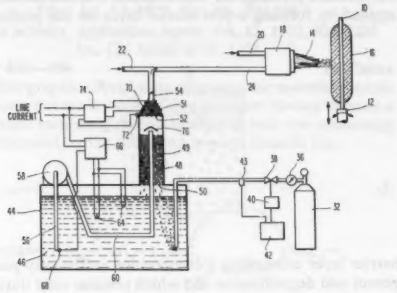
a column disposed above said reservoir and including a porous packing, said column having an outlet disposed above said packing and in fluid flow communication with said deposition means;

pump means for withdrawing the source material from the

reservoir and discharging the material into said column at a point above the lowermost end of said packing;

a source of carrier gas;

control means for determining the flow rate of said carrier gas; and



means coupling said control means to said column for introducing carrier gas into said packing at a point below said outlet.

4,212,664

NICOTINAMIDE-AMMONIUM HYDROXIDE PLANT GROWTH REGULATOR COMPOSITIONS

Setsuo Takeuchi, Higashiyamato; Akira Kawarada, Tokyo; Yasuo Ota, and Masayoshi Nakayama, both of Kounosu, all of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Continuation of Ser. No. 785,868, Apr. 7, 1977, abandoned, which is a continuation of Ser. No. 547,204, Feb. 5, 1975, abandoned, which is a continuation of Ser. No. 402,742, Oct. 2, 1973, abandoned. This application Mar. 20, 1979, Ser. No. 22,274

Claims priority, application Japan, Oct. 3, 1972, 47/99212

Int. Cl.² A01N *5/00*

U.S. Cl. 71—94 **6 Claims**

1. A plant growth regulating composition comprising from about 0.005 to about 10% by weight based on the weight of the composition of nicotinamide, a source of NH_4+ ions derived from ammonium hydroxide absorbed on silica gel, and an inert carrier therefor.

4,212,665

DECARBURIZATION OF METALLIC ALLOYS

Bruce L. Barton, Utica; Walter E. Johnson, Clinton, and Anthony J. Notaro, Whitesboro, all of N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,768

Int. Cl.² C22B *4/00*; C21C *7/10*

U.S. Cl. 75—10 V **5 Claims**

1. In a process for producing a metallic alloy, which process includes the steps of: charging a furnace; melting the charge; decarburizing the melt in a subatmospheric pressure; and casting the melt; the improvement comprising the steps of decarburizing said melt by adding both an oxide of an element of said alloy and a flux, said flux lowering the melting point of said oxide, said flux causing said oxide to assimilate with said melt; and by maintaining said melt at an elevated temperature in said subatmospheric pressure for a period of time sufficient to lower said melts carbon content to a desired level, oxygen within said oxide reacting with carbon within said melt to form gaseous compounds which emerge from said melt.

4,212,666

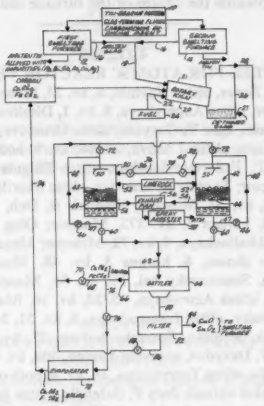
TIN RECOVERY

Edwin B. King, Dickinson; Wilson R. Barnes, and Luis W. Pommier, both of Seabrook, all of Tex., assignors to Associated Metals & Minerals Corporation, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,087

Int. Cl.² C22B *25/00*

U.S. Cl. 75—85 **17 Claims**



1. Removing tin from a tin-bearing material by:

(a) heating the material in the presence of slag-forming fluxing agents and a carbonaceous reducing agent to form a molten slag from which some of the tin separates as molten metal;

(b) separating the molten tin metal from the molten slag;

(c) thereafter adding carbon and a chloride-containing material to the molten slag to cause the tin remaining in the slag to form a volatile tin chloride compound; and

(d) stirring the molten slag in the presence of the chloride-containing material to release the volatile tin compound from the molten slag.

4,212,667

BLAST FURNACE SMELTING OF ZINC

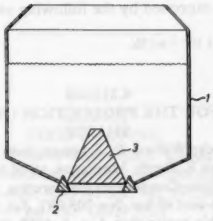
Michael W. Gammon, and Colin F. Harris, both of Bristol, England, assignors to Metallurgical Development Company, Nassau, The Bahamas

Filed Dec. 5, 1978, Ser. No. 966,732

Claims priority, application United Kingdom, Dec. 12, 1977, 51543/77

Int. Cl.² C22B *19/08*

U.S. Cl. 75—86 **12 Claims**



1. A method of smelting zinc in a blast furnace wherein the furnace is charged sequentially with separate loads of coke and agglomerated zinc oxide material, comprising, for a major proportion of the total operating time which is devoted to coke

charging, centrally directing from 25% to 50% by weight of the coke charged towards the center of the furnace shaft so as to promote a coke-rich charge core, while annularly directing the remainder of the coke charged towards the furnace walls, and for a minor proportion of said total operating time annularly directing from 80% to 95% by weight of the coke charged towards the walls of the furnace shaft to aid accretion melting, while centrally directing the remainder of the coke charged towards the center of the furnace shaft.

4,212,668

STEEL FOR ATOMIC REACTOR VESSELS

Nikolai N. Zorev, ulitsa Novinki, 6, kv. 23, Moscow; Vladimir A. Tsykanov, ulitsa Angarskaya, 9, kv. 1, Dimitrovgrad Ulyanovskoi oblasti; Igor V. Gorynin, ulitsa Gromova, 16, kv. 50; Lev V. Tupitsyn, ulitsa I Maya, 27/44, kv. 9, both of Leningrad; Georgy P. Fedortsov-Lutikov, ulitsa Zhigulevskaya, 30, kv. 34, Moscow; Anatoly A. Astafiev, ulitsa Sharikopodshipnikovskaya, 2, kv. 34, Moscow; Vladimir S. Dub, ulitsa Festivalnaya, 14, korpus 3, kv. 372, Moscow; Oleg M. Vishkarev, ulitsa Sakhalinskaya, 4, kv. 72, Moscow; Alexandr S. Loboda, Otkrytoe shosse, 6, korpus 3, kv. 48, Moscow; Iraida I. Kalugina, Simonovsky val, 19, kv. 56, Moscow; Nikolai N. Kobelev, ulitsa Azovskaya, 25/22, kv. 16, Moscow; Valentin V. Krasinsky, ulitsa Izumrudnaya, 8, kv. 51, Moscow; Valery A. Litvak, Kolpino, Sovetsky bulvar, 27, kv. 8, Leningrad; Evgeny F. Davydov, prospekt Lenina, 30a, kv. 64; Valentin K. Shamardin, ulitsa Teatralnaya, 4b, kv. 4, both of Dimitrovgrad Ulyanovskoi oblasti; Jury F. Balandin, ulitsa Basseinaya, 117, korpus 1, kv. 35, Leningrad; Vladimir A. Nikolaev, ulitsa Radischeva, 14, kv. 16, Gatchina Leningradskoi oblasti; Jury V. Sobolev, prospekt Lenina, 30/9, kv. 10; Anatoly M. Parshin, prospekt Annikova, 11-1, kv. 43, both of Leningrad, and Vladimir I. Badanin, ulitsa Gagarina, 12, kv. 21, Gatchina Leningradskoi oblasti, all of U.S.S.R.

Filed Jul. 24, 1978, Ser. No. 927,501

Int. Cl.[2] C22C *38/42*

U.S. Cl. 75—125 **1 Claim**

1. A steel for atomic reactor vessels, said steel consisting essentially of, in weight percent,

carbon	from 0.13 to 0.18
silicon	from 0.15 to 0.30
manganese	from 0.30 to 0.60
chromium	from 1.6 to 2.5
nickel	from 1.0 to 2.0
molybdenum	from 0.5 to 0.7
vanadium	from 0.01 to 0.12
copper	from 0.01 to 0.05
antimony	from 0.0005 to 0.009
tin	from 0.0005 to 0.009
phosphorus	from 0.001 to 0.005
arsenic	from 0.0005 to 0.002
iron,	the balance,

the total amount of phosphorus and arsenic contained in said composition is expressed by the following relationship:

$$P+5As \geq 1.10^{-2} \text{ wt.\%}.$$

4,212,669

METHOD FOR THE PRODUCTION OF PRECISION SHAPES

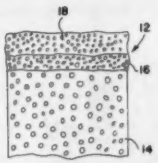
Stewart J. Veeck; William R. Freeman, both of North Muskegon, and Louis E. Dardi, Muskegon, all of Mich., assignors to Howmet Turbine Components Corporation, Muskegon, Mich.

Continuation-in-part of Ser. No. 705,087, Jul. 14, 1976, Pat. No. 4,104,782. This application Aug. 3, 1978, Ser. No. 930,810

Int. Cl.[2] B22F *5/00*

U.S. Cl. 75—226 **10 Claims**

1. In a process for producing metal shapes from powder particles which includes the steps of shaping the particles into a self-sustaining porous preform, applying a porous coating to the preform, subjecting the coated preform to a vacuum whereby the preform is degasified, conducting a fusion step comprising heating the coated preform, while maintaining the vacuum, to a temperature sufficient to render the coating non-porous and pressure-tight, and subjecting the preform to hot isostatic pressing, the improvement wherein said coating is applied by forming a first barrier layer on the preform, said



barrier layer comprising a composition sufficiently porous to permit said degasification and which remains solid during said fusion step, and applying a second layer over said first layer, said second layer comprising a metal alloy which is initially porous to permit said degasification, which fuses during said fusion step, and which is solid during the subsequent hot isostatic pressing whereby said second layer provides the means for rendering the coating non-porous and pressure-tight.

4,212,670

TITANIUM OXYCARBONITRIDE BASED HARD ALLOY

Gennady P. Shveikin, ulitsa Malysheva, 129, kv. 9; Vladislav D. Ljubimov, ulitsa Lunacharskogo, 182, kv. 122; Boris V. Mitrofanov, Sovetskaya ulitsa, 51, kv. 168; Vladimir A. Privalov, ulitsa Dobroljubova, 2, kv. 2, all of Sverdlovsk; Evgeny K. Plaxin, Kirovgradskaya ulitsa, 3, kv. 27, Kirovgrad Sverdlovskoi oblasti; Dmitry S. Elinson, ulitsa Shartashskaya, 10, kv. 12, Sverdlovsk; Stanislav I. Alyamovsky, ulitsa Lunacharskogo, 87, kv. 64, Sverdlovsk; Jury G. Zainulin, ulitsa Malysheva, 131, kv. 5, Sverdlovsk, and Sergei P. Makarov, ulitsa Gazorezchikov, 8, kv. 1, Sverdlovsk, all of U.S.S.R.

Continuation of Ser. No. 658,693, Feb. 17, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 885,486

Int. Cl.[2] C22C *1/05, 29/00*

U.S. Cl. 75—233 **1 Claim**

1. A titanium carbonitride-base hard alloy with a nickel-molybdenum binder comprising, in percent by weight:

nickel: 9.5–49.0

molybdenum: 2.5–20.5

uncombined carbon: not greater than 0.6,

and wherein the titanium carbonitride component has the formula $TiC_xN_yO_z$, and contains oxygen in amounts varying from 0.155 to 3.5 percent by weight, said titanium carbonitride constituents having the following ratios: x=0.45 to 0.55, y=0.41 to 0.55, z=0.003 to 0.14, with x+y+z=1; said alloy having a low porosity of from 0.1 to 0.3 percent.

4,212,671

CEMENTED CARBIDE CONTAINING MOLYBDENUM TUNGSTEN CARBONITRIDE HAVING WC TYPE STRUCTURE

Peter Ettmayer, and Richard Kieffer, both of Vienna, Austria, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jan. 27, 1978, Ser. No. 872,926

Claims priority, application Austria, Jan. 27, 1977, 496/77

Int. Cl.[2] C22C *29/00*

U.S. Cl. 75—238 **5 Claims**

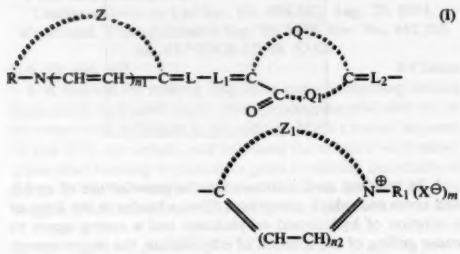
1. A cemented carbide consisting of one or more hard materials in an amount of 70 to 97% by weight and a binder alloy of iron group metals in amounts of 3 to 30% by weight, characterized in that the hard material part consists of at least 20% by weight of molybdenum-tungsten carbonitride having the structure of tungsten carbide WC.

4,212,672
LITHOGRAPHIC SILVER HALIDE PHOTOSENSITIVE MATERIAL

Yuji Mihara; Haruo Takei, and Noriyuki Inoue, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 12, 1978, Ser. No. 924,108
Claims priority, application Japan, Jul. 12, 1977, 52-83230
Int. Cl.² G03C 5/04, 1/08
U.S. Cl. 430—494 **10 Claims**

1. A lithographic silver halide photographic material providing superior dot quality comprising a support having thereon a silver halide emulsion layer containing at least one sensitizing dye represented by the following general formula (I):



(I)

wherein Z and Z_1, which may be the same or different, each represents the non-metal atoms necessary for completing a 5-membered or 6-membered nitrogen-containing heterocyclic nucleus; R and R_1, which may be the same or different, each represents an alkyl group or an aryl group; Q and Q_1 together represent the non-metal atoms necessary for completing a 4-thiazolidinone nucleus, 5-thiazolidinone nucleus, or 4-imidazolidinone nucleus; L, L_1 and L_2 each represents a methine group; n_1 and n_2 each represents 0 or 1; and m represents 0 or 1, m being 0 when the dye forms an inner salt; with the silver halide emulsion layer or a layer adjacent the silver halide emulsion layer containing at least one compound represented by the following general formula (II):

$$D_1—A—D_2 \qquad \text{(II)}$$

wherein D_1 and D_2, which may be the same or different, each represents a condensed polycyclic aromatic heterocyclic residue or an aromatic heterocyclic-substituted amino group, wherein the polycyclic aromatic heterocyclic residue or the aromatic heterocyclic-substituted amino group may contain an $—SO_3M$ group wherein M represents a hydrogen atom or a cation; and —A— represents a divalent aromatic residue, with the proviso that when D_1 or D_2 does not contain an $—SO_3M$ group, —A— contains an $—SO_3M$ group; and with the silver halide photographic material containing at least one polyalkylene oxide compound capable of increasing infections development.

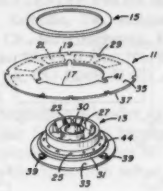
10. A process for forming images which comprises exposing the lithographic silver halide photographic material of claim 1 to neo-helium laser light using a scanner and then subjecting the exposed photographic material to a lithographic development, whereby superior dot images are obtained.

4,212,673
FILM UNIT ASSEMBLY

Gurdip S. Sethi, Rochester; Karl Sperber, Hilton, and Donald G. Tidd, Palmyra, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,079
Int. Cl.² G03C 1/76, 1/72
U.S. Cl. 430—496 **13 Claims**

1. A photographic film unit comprising:
an annular photosensitive sheet having a central aperture;
a thermoplastic hub received in the central aperture with clearance to permit movement between said sheet and said hub; and



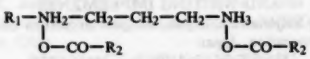
a mass of thermoplastic material melted from said hub into the clearance between said hub and said sheet to immobilize said sheet relative to said hub.

4,212,674
CORROSION PREVENTATIVE PIGMENT AND COMPOSITION

Dieter Strauch, Zofingen, Switzerland, assignor to Plüss-Staufer AG, Oftringen, Switzerland

Filed Jun. 4, 1973, Ser. No. 366,325
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1972, 2228200
The portion of the term of this patent subsequent to Jan. 15, 1994, has been disclaimed.
Int. Cl.² C09K 3/00
U.S. Cl. 106—14.05 **11 Claims**

1. A corrosion inhibiting secondary pigment for use in a coating composition, said secondary pigment comprising a first material selected from the group of N-octadecene (9) yl-1,3-propanediammonium dioctadecene (9) ylate; fatty amine salts of the formula:



wherein R_1 is $CH_3—(CH_2)_n$ wherein n is an integer from 15 to 17, and R_2 is $CH_3—(CH_2)_7—CH=CH—(CH_2)_7$; and mixtures thereof; and a second material in the form of fine particles serving as a carrier for the first material, said first material being coated on said particles in the form of a film whereby high surface to volume ratio for said first material is established.

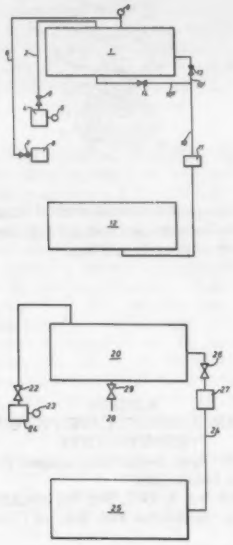
4,212,675
FIREPROOFING

Garnet Robinson, Weston-Super-Mare, England, assignor to Retroflame International Limited, Gloucestershire, England

Filed Apr. 3, 1978, Ser. No. 893,198
Int. Cl.² C09D 5/18
U.S. Cl. 106—18.15 **28 Claims**

1. A fireproofing composition containing an aqueous solution of a fire retardant water-soluble inorganic ammonium salt and a surface tension reducing amount of a surfactant selected from the group consisting of organic polyphosphoric ester-acids and salts thereof, wherein said ester acids are coesters of

an aliphatic alcohol and a nonionic adduct of ethylene oxide and a reactive-hydrogen-containing organic compound in



which coesters less than all of the phosphate protons are consumed by ester bonds.

4,212,676

COMPOSITIONS FOR SOLID WRITING MATERIALS AND WRITING IMPLEMENTS

Ken Ueda, Shijonawate, Japan, assignor to Sakura Color Products Corporation, Japan

Filed Feb. 13, 1979, Ser. No. 11,935
Claims priority, application Japan, Feb. 22, 1978, 53-20284
Int. Cl.[2] C09D *13/00*
U.S. Cl. 106—19 **19 Claims**

1. A composition for a writing material comprising:

(i) about 25 to 50% by weight of at least one emulsifiable polyethylene wax having a penetration value according to JIS K 2530 of about 1 to about 20 and an acid value of about 10 to about 25,

(ii) about 12 to about 25% by weight of at least one liquid organic compound having a boiling point of not lower than 190° C. and a viscosity of about 10 to about 2000 cps at 20° C. and selected from the group consisting of (a) higher aliphatic monohydric alcohols, (b) saturated aliphatic dihydric alcohols, (c) polyalkyleneoxides and (d) glycerine and glycerine derivatives,

(iii) about 20 to about 45% by weight of at least one organic solvent capable of dissolving or uniformly dispersing the components (i) and (ii) and having a boiling point higher than about 90° C. but lower than 190° C. and selected from the group consisting of (a) ethers of glycols, (b) ether esters of glycols, (c) aliphatic monohydric alcohols, (d) cyclic monohydric alcohols and (e) a mixture containing 50 to 99% by weight of at least one of the solvents (a), (b), (c) and (d) and 1 to 50% by weight of non-polar organic solvents, and

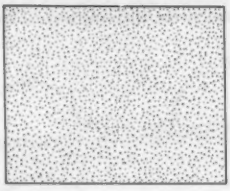
(iv) about 2 to about 30% by weight of at least one pigment.

4,212,677

MOLDING SAND MIXTURE FOR THE MANUFACTURE OF MOLDS AND CORES

Jury G. Khmelev, ulitsa Barrikadnaya, 19, kv. 87; Gennady P. Kim, ulitsa Marshala Eremenko, 53, kv. 32, both of Volgograd; Dmitry Y. Zhinkin, ulitsa 5 Parkovaya, 56, korpus 6, kv. 51, and Solomanida I. Kleschevnikova, ulitsa Bazhova, 15, korpus 1, kv. 22, both of Moscow, all of U.S.S.R.

Filed Oct. 25, 1978, Ser. No. 954,575
Int. Cl.[2] B28B *7/34*
U.S. Cl. 106—38.35 **3 Claims**



1. In molding sand mixtures for the manufacture of molds and cores and which comprise a filler, a binder in the form of a solution of hydrolyzed ethylsilicate and a curing agent to cause gelling of the solution of ethylsilicate, the improvement which comprises using as the curing agent an organic solution of a polyorganosilazane of the formula:

$$\{(R_2SiNH)_n[R'Si(NH)_{1.5}]_m\}_k,$$

wherein R is CH_3, R′ is selected from the group consisting of CH_3 and C_6H_5, n=1, k=4, m=1-3, the filler, binder and curing agent being present in the following proportions in percent by weight:

[solution of hydrolyzed ethylsilicate] binder	10 to 35
[organic solution of polyorganosilazane[curing agent	0.2 to 2.0
filler	the balance.

4,212,678

RAPIDLY CRYSTALLIZED BETA-SPODUMENE GLASS-CERAMIC MATERIALS

Kenneth Chyung, Painted Post, and John E. Megles, Jr., Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 848,862, Nov. 7, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,042
Int. Cl.[2] C03C *3/22*
U.S. Cl. 106—39.7 **7 Claims**

4. A white, opaque, chemically durable, low-expansion glass-ceramic material comprising beta-spodumene solid solution as the principal crystal phase, said material being produced by

(a) selecting for crystallization a glass having an oxide composition falling within one of Ranges I and II below, wherein:

Range I includes compositions consisting essentially, in weight percent, of about 63–67% SiO_2, 18–21% Al_2O_3, 3.0–5.0% Li_2O, 1.0–2.5% MgO, 0.4–2.5% ZnO, 4.0–5.0% TiO_2 1.5–4.7% PbO, 0–1.0% B_2O_3, 0–1.0% Na_2O, 0–2.0% P_2O_5, and 0–2% total of $B_2O_3+Na_2O+P_2O_5$; and

Range II includes compositions consisting essentially, in weight percent, of about 68–71% SiO_2, 16–18% Al_2O_3, 3.0–5.0% Li_2O, 1.0–2.5% MgO, 0.4–2.5% ZnO, 4.0–5.0% TiO_2, 0–1.0% B_2O_3, 0–1.0% Na_2O, 0–2.0% P_2O_5, and 0.2–2.2% total of $B_2O_3+Na_2O+P_2O_5$; and

(b) converting the selected glass to a white, opaque glass-

ceramic material utilizing a crystallization heat treatment wherein the crystallization temperature does not exceed about 1000° C. and the time of exposure to crystallization temperatures in the range of about 900°–1000° C. does not exceed about 2 hours;

said glass-ceramic material exhibiting an average linear coefficient of thermal expansion (25°–300° C.) not exceeding about 13×10^{-7}/°C. and excellent detergent durability.

4,212,679

METHOD OF MAKING MAGNESITE GRAIN

Kermit M. Bonar, Clearfield, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 499,682, Aug. 28, 1974, abandoned. This application Sep. 12, 1978, Ser. No. 941,705

Int. Cl.² C04B *35/48, 35/04*

U.S. Cl. 106—57 **8 Claims**

1. A method for making magnesite grain comprising mixing magnesium hydroxide slurry, lime yielding material and zircon in proportions sufficient to provide an MgO content between 85 and 95%, by weight, and calcining the mixture with subsequent dead burning to provide a grain consisting essentially of 2.5 to 7.7%, by weight, calcium zirconate, 2.4 to 7.4%, by weight, dicalcium silicate and the balance periclase.

4,212,680

THIXOTROPIC REFRACTORY BINDER BASED UPON ALUMINUM PHOSPHATE GELLED SILICA SOLS

Lawrence E. Schulz, Park Forest, Ill., assignor to Nalco Chemical Co., Oak Brook, Ill.

Filed Apr. 30, 1979, Ser. No. 34,240

Int. Cl.² C03C *35/14, 35/44;* **B01J** *13/00*

U.S. Cl. 106—65 **2 Claims**

1. An improved refractory binder consisting essentially of:

Ingredients	% by Weight
Aqueous colloidal silica sol having an average particle size greater than 35 millimicrons and a silica concentration, (SiO_2), of at least 40% by weight	60–85
Phosphoric acid expressed as P_2O_5	5–35
Al_2O_3 (Alumina)	5–15

4,212,681

METHOD OF ACCELERATING THE HARDENING AND INCREASING THE STRENGTH OF PORTLAND CEMENT

Yordan T. Simeonov, and Nikola B. Djabarov, both of Sofia, Bulgaria, assignors to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban, Sofia, Bulgaria

Continuation of Ser. No. 839,043, Oct. 3, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 970,056

Int. Cl.² C04B *7/35*

U.S. Cl. 106—89 **3 Claims**

1. A method of accelerating the hardening and increasing the strength of Portland cement, which comprises mixing 100 parts by weight of Portland cement with water with a mixture of 4–16 parts by weight, containing dialuminum pentahydroxychloride, calcium sulfate and calcium oxide in weight ratios of Al_2O_3:$CaSO_4$:CaO = 1:3.5 to 4.3:1.3 to 1.8 and up to 2 parts by weight of an alkali metal nitrite, at a temperature up to 90° C., thereafter permitting the mixture to harden at a temperature up to 100° C.

4,212,682

PROCESS AND APPARATUS FOR PRODUCING AN AGGREGATE MATERIAL FROM BOTTOM ASH

William E. Burkett, Saltville, Va., assignor to James River Hydrate & Supply Co., Inc., Buchanan, Va.

Filed Mar. 13, 1978, Ser. No. 886,116

Int. Cl.² C04B *31/10*

U.S. Cl. 106—288 B **9 Claims**

1. A process for producing a cinder aggregate from solid particles of bottom ash formed by burning coal in a power plant, the process comprising the steps of:

(a) mixing water with the bottom ash at the power plant to form a slurry;

(b) transporting the slurry from the power plant through a conduit to a processing plant;

(c) passing the slurry through a baffled flume in the processing plant to partially dewater the slurry; said step of passing the slurry through the flume including the steps of

(i) directing solid particles in the slurry toward the bottom of the flume by baffles which are inclined downwardly in the direction of flow to produce a concentrated slurry component in the region of the bottom of the flume and an upper slurry component in the region of the top of the flume, said upper slurry component comprising excess water and undesirable proportions of fine particles; and

(ii) directing the uppr, slurry component away from the slurry flow path as a first waste component;

(d) passing the slurry through a classifier subsequent to said step of passing the slurry through the flume to claim the larger particles, said step of passing the slurry through the classifier including the steps of

(i) classifying the material into a second waste component including water and undersized particles and into an aggregate component comprising solid particles of desired size; and

(ii) directing the second waste component away from the flow path, and directing the aggregate component to a stockpile for use as an aggregate.

4,212,683

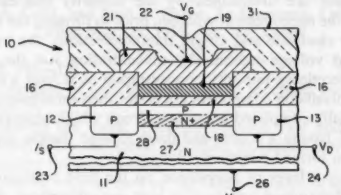
METHOD FOR MAKING NARROW CHANNEL FET

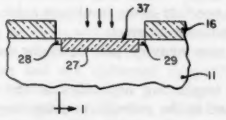
Robert K. Jones, Centerville, and Armand J. van Velthoven, West Carrollton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 27, 1978, Ser. No. 890,425

Int. Cl.² H01L *21/265, 29/78*

U.S. Cl. 148—1.5 **24 Claims**





1. In a method for forming a semiconductor device having an electrode formed over a channel region for forming a chan-

nel in a semiconductor substrate, the improvement wherein the channel region comprises at least two sections having different threshold voltages including a section having an effective width of a predetermined dimension, comprising:

forming a mask over the substrate, the mask having an aperture having a width less than the channel region;

depositing in the substrate via the mask aperture impurities of a first conductivity type to form a first channel region section extending the length of the channel region and having a width smaller than the width of the channel region;

removing material from at least a side of the mask aperture to increase the aperture width by the predetermined dimension; and

forming the electrode to encompass the mask aperture.

4,212,684

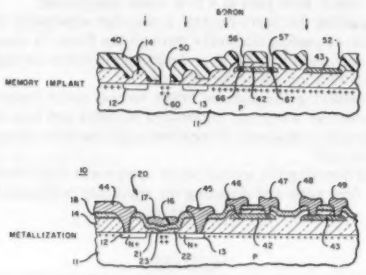
CISFET PROCESSING INCLUDING SIMULTANEOUS DOPING OF SILICON COMPONENTS AND FET CHANNELS

Ronald W. Brower, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 20, 1978, Ser. No. 962,423

Int. Cl.[2] **H01L** *29/78, 21/96;* **B01J** *17/00;* **H01L** *11/14*

U.S. Cl. 148—1.5 **12 Claims**



1. In a process for forming an integrated circuit including at least a memory field effect transistor having a channel memory section and at least a polysilicon component on a semiconductor substrate and wherein the memory threshold voltage of the field effect transistor and the resistance of the polysilicon component are determined by the impurity concentration therein, the improvement wherein, prior to forming the transistor gate electrode and circuit interconnections, the memory threshold voltage-determining concentration and the resistance-determining impurity concentration of at least a portion of the polysilicon component are established simultaneously in the partially completed integrated circuit which comprises the substrate having a source and drain formed therein and field insulation formed selectively thereon, by:

forming a layer of polysilicon on the field insulation in a predetermined pattern of at least one component, the size and geometry of the component being selected to provide a given resistance for a given impurity concentration therein;

forming an aperture in the insulating oxide over the location of the transistor channel;

forming a non-memory gate insulator over the transistor channel;

selectively implanting impurities in the channel memory section and in the polysilicon component to establish the given memory threshold voltage-determining and resistance-determining impurity concentration in the channel and in at least the portion of the polysilicon component; and

selectively forming a memory gate insulator over the memory channel section.

4,212,685

PROTECTIVE AND COLOR RECEPTIVE COATING FOR ALUMINUM

James N. Tuttle, Bedford, Mass., assignor to Lea Manufacturing Company, Waterbury, Conn.

Filed Dec. 11, 1978, Ser. No. 968,104

Int. Cl.[2] **C23B** *9/02;* **C23F** *7/14*

U.S. Cl. 148—6.1 **19 Claims**

1. A process for forming a coating on an aluminum part that is corrosion resistant, receptive to coating and readily dyed, said process comprising the steps of cleaning the aluminum to the extent necessary and formation of said coating using chemical means consisting of contacting the surface of said aluminum part with an aqueous, alkaline solution of ferric citrate, said solution having a pH between about 10 and 13 and the ferric citrate being present in solution in an amount of at least 0.01 moles per liter of solution.

4,212,686

ZIRCONIUM ALLOYS

Liv Lunde, Nittedal, Norway; Raymond C. Asher, Newbury, England; Gerard Slattery, Leatown, Nr. Preston, England; Frank W. Trowse, Preston, England; Christopher Tyzack, Hale Barns, England; Gustaf C. Östberg, Stockholm, Sweden, and Erich Tolksdorf, Nieder-Roden-Rollwald, Fed. Rep. of Germany, assignors to AB Atomenergi, Nykoping, Sweden; Atomenergikommissionen, Copenhagen, Denmark; Institutt for Atomenergi, Kjeller, Norway; United Kingdom Atomic Energy Authority, London, England and Valtion Teknillinen Tutkimuskeskus, Helsinki, Finland

Continuation of Ser. No. 692,902, Jun. 4, 1976, abandoned, which is a continuation of Ser. No. 489,046, Jul. 16, 1974, abandoned. This application Mar. 3, 1978, Ser. No. 883,175

Int. Cl.[2] **C21D** *1/26;* **C22C** *16/00*

U.S. Cl. 148—11.5 F **6 Claims**

1. Zirconium alloys which are characterized by their corrosion resistance and machanical properties, the alloys consisting essentially of 0.25 to 1.50% by weight of niobium, 0.025 to 0.20% by weight of tin, 0.02 to 1.00% by weight of total chromium and molybdenum, each of said chromium and molybdenum being present in respective amounts of at least 100 p.p.m. for chromium and 45 p.p.m. for molybdenum, and the remainder of zirconium.

5. A method for simplified manufacture of corrosion resistant nuclear reactor components of zirconium-base alloys containing minor amounts of niobium, tin and at least one element of the group of elements consisting of chromium and molybdenum, said method including the following steps:

(a) selecting said minor amounts within the ranges of 0.25 to 1.50% by weight of niobium, 0.025 to 0.20% by weight of tin and 0.02 to 1.00% by weight of chromium and molybdenum, said chromium being present in an amount of at least 100 p.p.m and said molybdenum being present in an amount of at least 40 p.p.m,

(b) cold shaping said alloys, and

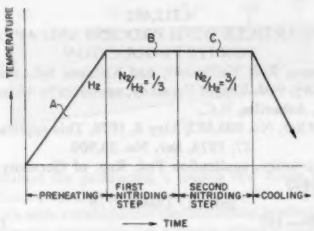
(c) thermally treating said alloys, said thermal treatment consisting of annealing for less than four hours at temperatures less than 700° C. without subsequent quenching or forced cooling, essentially without loss of corrosion resistance and mechanical properties of said alloys.

4,212,687

ION-NITRITING PROCESS

Akio Tanaka, Ono; Mizuo Edamura, Kobe; Satoshi Furuitsu, Kakogawa, and Satoru Kunise, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 20, 1978, Ser. No. 953,208
Claims priority, application Japan, Oct. 20, 1977, 52-126606
Int. Cl.[2] C21D 1/48
U.S. Cl. 148—16.6 5 Claims



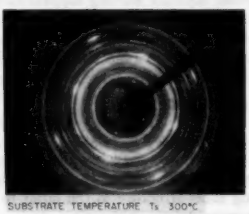
1. An ion-nitriding process including the steps of subjecting a workpiece having at least one opening area to a DC voltage in an atmosphere of nitrogen-containing gas so as to produce a glow discharge on the workpiece, the process being characterized by a first nitriding step which is carried out in an atmosphere of nitrogen and hydrogen having a mixing ratio of nitrogen to hydrogen which is small enough to suppress arc discharge on the workpiece and a second nitriding step which is carried out under a mixing ratio of nitrogen to hydrogen which is large as compared with the ratio in the first nitriding step so that glow discharge is produced even in the opening area of the workpiece.

4,212,688

ALLOY FOR MAGNETORESISTIVE ELEMENT AND METHOD OF MANUFACTURING THE SAME

Yoshimi Makino, and Tsutomu Okamoto, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 1, 1978, Ser. No. 956,672
Claims priority, application Japan, Feb. 27, 1978, 53-22626
Int. Cl.[2] C22C 19/00
U.S. Cl. 148—31.55 15 Claims



1. An alloy for a magnetoresistive element having a small magnetostriction constant and a large magnetoresistance anisotropy ratio, said alloy having an ordered phase with superstructure and consisting of nickel and cobalt atoms, the atomic ratio of said nickel atoms to said cobalt atoms being substantially within the range of 40:60 to 60:40.

4,212,689

METHOD FOR PRODUCING GRAIN-ORIENTED ELECTRICAL STEEL SHEETS OR STRIPS HAVING A VERY HIGH MAGNETIC INDUCTION

Yoh Shimizu, Chiba; Yoshiaki Iida, Kobe; Tomomichi Goto, Chiba; Hiromi Mitsunori, Chiba, and Isao Matoba, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 552,223, Feb. 24, 1975, abandoned. This application May 2, 1977, Ser. No. 792,579
Claims priority, application Japan, Feb. 28, 1974, 49-22861
Int. Cl.[2] H01F 1/04
U.S. Cl. 148—111 7 Claims

1. In a method for producing grain-oriented electrical steel sheets or strips having a very high magnetic induction, in which method a forsterite ceramic coating is deposited on a sheet of silicon steel raw material composed of not more than 0.06% of C, 2.0–4.0% of Si, 0.01–0.20% of Mn, 0.005–0.10% of a total amount of at least one of S and Se and the remainder being Fe, the sheet of silicon steel raw material is hot rolled to a thickness of 2–5 mm, the hot rolled sheet is subjected repeatedly to annealings and cold rollings to prepare a cold rolled sheet having a final gauge of 0.1–0.5 mm, the cold rolled sheet is subjected to a decarburization annealing to decrease the carbon content to not more than 0.005%, and then the decarburized sheet is subjected to a series of final annealing steps, the improvement which comprises the cold rolled sheet containing substantially no Sb and Al, prior to being subjected to the final annealing steps, so as to prevent the deterioration of the forsterite ceramic coating formed on the sheet during the final annealing steps, the cold rolled sheet consisting of not more than 0.06% of C, 2.0–4.0% of Si, 0.01–0.20% of Mn, 0.005–0.10% of a total amount of at least one of S and Se and the remainder being substantially Fe, and containing not more than 0.0045% of N, and the final annealing steps consisting of a step for developing in the sheet fully secondary recrystallized grains, having (110) [001] orientation at a temperature of 800°–900° C., and a step for effecting a purification annealing of the sheet at a temperature of not lower than 1,000° C., so as to form a highly adhesive ceramic coating on the surface of the sheet.

4,212,690

HEAT TREAT FIXTURE AND METHOD OF HEAT TREATING

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Charles S. Beuyukian, Gardena, Calif.; Robert M. Heisman, Palos Verdes Peninsula, Calif.; Cyrus C. Haynie, Newport Beach, Calif., and Emil P. Ruppe, La Crescenta, Calif.

Filed Mar. 23, 1979, Ser. No. 23,501
Int. Cl.[2] C22F 1/04
U.S. Cl. 148—131 9 Claims

9. A method of heat treating a metal specimen comprising the steps of:

(1) placing the metal specimen between two glide sheets which allow the metal specimen to expand during heat treating without binding;

(2) placing support bars on the outer surfaces of said glide sheets to allow passage of quenching fluid;

(3) placing support plates on the outer faces of said support bars to prevent the metal specimen from warping;

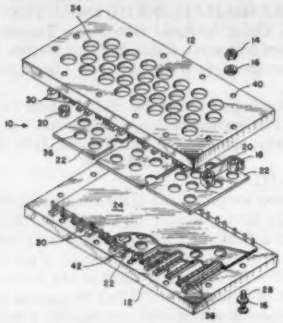
(4) placing spacers between said support plates at their outer edge to limit clamping pressure on the metal specimen;

(5) placing nuts and bolts and washers around the outer edge of said support plates so that the bolts pass through said support plates and are tightened to provide clamping pressure on the metal plates;

(6) heating the assembly comprised of the metal specimen and heat treating fixture to such temperature as appropriate for tempering the specimen;

(7) maintaining the specimen and fixture at elevated temperature for a period of time;

(8) quenching the specimen and fixture in a fluid bath at a predetermined temperature; and



(9) removing the bolts from the support plates, and the support plates and glide sheets from the specimen.

4,212,691

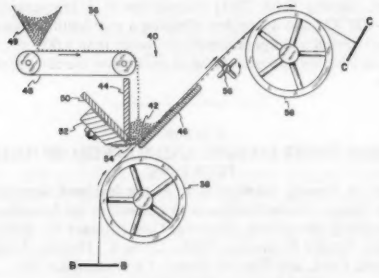
METHODS AND APPARATUS FOR MAKING DECORATIVE INLAID TYPES OF RESILIENT SHEET MATERIALS AND THE LIKE

Milton J. Potosky, Hamilton Square, and Peter J. Rohrbacher, Stockton, both of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Filed Nov. 21, 1978, Ser. No. 962,595

Int. Cl.[2] B32B *5/20, 5/16, 31/20;* **B05C** *19/00*

U.S. Cl. 156—79 **22 Claims**



1. A method for making decorative inlaid types of resilient sheet materials which comprises: forming a layer of ungelled resinous polymer composition having a wet, tacky surface; depositing a substantially uniform layer of decorative chips or flakes upon said wet, tacky surface as it is being advanced angularly forwardly and upwardly at an angle greater than the angle of repose of said decorative chips or flakes on said wet tacky surface; advancing said wet, tacky surface with said decorative chips or flakes thereon angularly forwardly and upwardly at an angle greater than the angle of repose for said decorative chips or flakes upon said wet, tacky surface, whereby a portion of said decorative chips or flakes slide backwardly and downwardly; beating or vibrating said wet, tacky surface, whereby an additional portion of said decorative chips or flakes slide backwardly and downwardly; providing a seal substantially in contact with said wet, tacky surface, capable of permitting said wet, tacky surface to be advanced angularly forwardly and upwardly thereunder but capable of preventing said decorative chips or flakes from slipping backwardly or downwardly thereunder, whereby a supply bank of said decorative chips or flakes is formed on said seal and a portion of said wet, tacky surface; and consolidating said layer of ungelled resinous polymer composition and said decorative chips or flakes which remain on said wet, tacky surface, whereby said decorative chips or flakes become substantially completely embedded in said layer of ungelled resinous polymer composition.

4,212,692

MATTING ARTICLE WITH PROCESS AND APPARATUS FOR ITS PRODUCTION

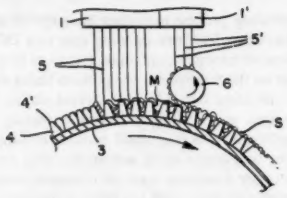
Alfred Rasen; Rolf Vollbrecht, and Klemens Schenesse, all of Obernburg, Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 903,552, May 8, 1978. This application Apr. 27, 1979, Ser. No. 33,909

Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720403

Int. Cl.[2] D04H *3/16*

U.S. Cl. 156—167 **11 Claims**



1. A process for the manufacture of a coherently self-bonded, low density matting article which comprises:

melt-spinning a plurality of synthetic fiber-forming polymer filaments from a first set of spinning orifices with a diameter of at least about 0.1 mm. vertically downwardly for deposit onto a moving support intersecting the filaments substantially horizontally at a distance of about 3 to 20 cm. below the spinning orifices, said moving support having an undulating peak and valley surface structure to receive and form the freshly melt-spun filaments from said first set of spinning orifices into a corresponding undulating peak and valley three-dimensional matting sheet structure with the filaments from adjacent spinning orifices overlapping and self-bonding with each other at random points of intersection;

melt-spinning another plurality of synthetic fiber-forming polymer filaments from a second set of spinning orifices onto a second separate moving support having a substantially smooth and even surface structure to receive and form the freshly melt-spun filaments from said second set of spinning orifices into a substantially flat nonwoven web of overlapped filamentary loops self-bonding at random points of intersection, said nonwoven web being substantially thinner and exhibiting a substantially lower porosity than said matting structure;

transferring said nonwoven web while still tacky from said second moving support directly onto the free surface of the matting sheet structure as the latter is carried while still tacky on said first moving support;

lightly pressing said nonwoven web against the free surface of the matting sheet structure such that part of the tacky surface filaments in the contacting face portions of the web and the matting adhere to each other at mutual points of intersection; and

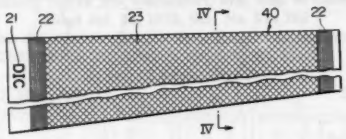
cooling both the web and matting on said first moving support to firmly bond the adhered filaments to each other.

4,212,693

FISHING ROD AND PROCESS FOR ITS PRODUCTION

Koukichi Saito, Asaka, and Nobuo Suzuki, Okegawa, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Jan. 30, 1978, Ser. No. 873,533
Claims priority, application Japan, Feb. 3, 1977, 52-10232
Int. Cl.[2] B65H *81/00*; B31C *13/00*; B65H *81/03*
U.S. Cl. 156—173 2 Claims



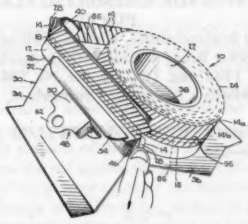
1. A method for producing a fishing rod made of a glass fiber-reinforced synthetic resin which comprises impregnating a glass cloth with a transparent thermosetting synthetic resin to form a prepreg, wrapping the prepreg about a tapered mandrel, curing it under heat, and then pulling out the mandrel, wherein the glass cloth has letters, geometrical figures or other decorative designs printed directly on the whole of its surface prior to impregnation.

4,212,694

TAPE SPLICING DEVICE AND DISPENSER THEREFOR

Arthur Brandwein, 147-37 77 Ave., Flushing, N.Y. 11367

Filed Aug. 11, 1978, Ser. No. 932,861
Int. Cl.[2] B65H *81/00*
U.S. Cl. 156—184 6 Claims



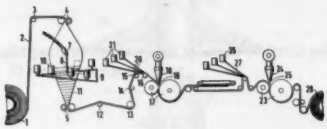
1. A method for making a tape splicing device comprising, laminating an adhesive tape to an elongated flexible sheet, the adhesive tape being of lesser width than the sheet, forming an elongated scoreline in the sheet coincident with the adhesive tape to divide the sheet into major and marginal portions with a first portion of the tape lying on the major portion of the sheet, and a second portion of the tape lying on the marginal portion of the sheet, the major and marginal portions of the sheet being of greater width than the respective first and second portions of the tape, forming a first plurality of spaced and parallel severances in the major portion of the sheet and the first portion of tape extending from the scoreline past the first portion of the tape to divide the major portion into elongated tab members that extend from the scoreline between consecutive first severances, and forming a second plurality of spaced and parallel severances respectively continuous with the first spaced and parallel severances, in the second portion of the tape to sever the second portion of tape but not to sever the underlying marginal portion of the sheet so that no slits extend substantially across the marginal portion and the marginal portion remains continuous and in one piece after the second plurality of severances are made and need not be supported by or secured to any carrier sheet, the first and second severances being made to divide the adhesive tape into individual adhesive splicing strips that are adhered to the marginal portion and to the respective elongated tab members, and providing the major and marginal portions of said sheet with adhesive release means to permit release of the adhesive splicing strips from the major and marginal portions.

4,212,695

METHOD OF REINFORCING FLATTENED TUBULAR FILM WITH TAPE LAYERS

Frank Bosse, Tecklenburg, and Karl-Heinz Lage, Lengerich, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,314
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2710035
Int. Cl.[2] B29F *3/10*
U.S. Cl. 156—188 6 Claims



1. A method of reinforcing an axially-extending tubular film with tape layers which extend axially to and helically about the axis of the tubular film, the method comprising:

passing tubular film to be reinforced about a core floatingly positioned inside the film so that the film is pulled apart;

helically winding a reinforcing tape around the pulled apart film while the film is being supported by the core, the reinforcing tape forming a tape layer extending helically about the tube axis;

flattening the film after the tape has been wound thereabout;

placing a first plurality of spaced parallel tapes on one side of the flattened film;

extruding and pressing a first plastics layer onto the parallel tapes so that the parallel tapes are connected to the one side of the flattened film and the reinforcing tape, the first plastics layer forming a tape layer extending axially to the tube axis;

placing a second plurality of spaced parallel tapes on the other side of the flattened film; and

extruding and pressing a second plastics layer onto the parallel tapes so that the second plurality of parallel tapes are connected to the other side of the flattened film and the reinforcing tape.

4,212,696

METHOD OF MAKING AN ORGANIC COMPOSITE ELECTRICAL INSULATOR SYSTEM

George E. Lusk, Woodstock; Sloe T. Mak, Crystal Lake, and John C. Haarsma, Barrington, all of Ill., assignors to Joslyn Mfg. and Supply Co., Chicago, Ill.

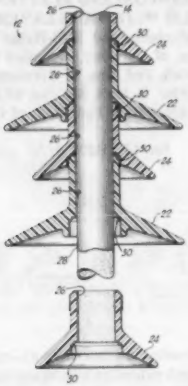
Filed Sep. 29, 1976, Ser. No. 727,757
Int. Cl.[2] H01B *19/00, 17/02, 17/66*
U.S. Cl. 156—294 9 Claims

1. A method of manufacturing an electrical insulator system having in an assembled condition a resin-bonded fiberglass core member and a plurality of ethylene-propylene copolymer elastomeric electrically insulating elements disposed about said core member, each one of said plurality of insulating elements having an elongated bore, at least an elongated portion of said bore having an inner diameter less than the outer diameter of said core member prior to disposition of said one insulating element about said core member, comprising the steps of:

applying a silicone adhesive composition to at least some of the interface surfaces of both said plurality of insulating elements and said core member;

completely drying said adhesive composition so that said silicone adhesive composition is non-tacky and exhibits a low coefficient of friction at said interface surfaces;

subsequent to said drying step, assembling said plurality of insulating elements about said core member without the application of further lubrication to said interface surfaces of said plurality of insulating elements over the outer interface surface of said core member to thereby bring



said interface surfaces into direct physical engagement and to thereby compressively load said interface surfaces and;

subsequent to said assembling step, curing said adhesive composition to adhesively bond said plurality of insulating elements to said core member at said interface surfaces.

4,212,697

PROCESS FOR PRODUCING GLASS FIBER-REINFORCED RESIN MOLDED SHEETS

Osamu Yamamoto; Yoshiki Matsumoto; Hiromi Yamada, and Keishin Takehara, all of Chiba, Japan, assignors to Nitto Boseki Co., Ltd., Fukeshima, Japan

Continuation-in-part of Ser. No. 825,511, Aug. 17, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,872

Claims priority, application Japan, Sep. 22, 1976, 51/114119; Mar. 22, 1978, 53/32625

Int. Cl.[2] B32B *17/04*

U.S. Cl. 427—389.8 **9 Claims**

1. A process for producing a glass fiber-reinforced molded sheet by impregnating glass fibers with a resin syrup and thereafter hardening said resin syrup with which the glass fibers are impregnated, wherein said resin syrup is 20 to 35% by weight vinyl aromatic hydrocarbon and comprises 25 to 50 parts by weight acrylonitrile-vinyl aromatic hydrocarbon copolymer and 75 to 50 parts by weight acrylic acid, methacrylic acid, methacrylic acid ester, acrylic acid ester or mixtures thereof, said copolymer comprising 10 to 50 parts by weight acrylonitrile and 90 to 50 parts by weight vinyl aromatic hydrocarbon and having a viscosity average molecular weight of 30,000 to 100,000.

4,212,698

APPARATUS FOR SETTING FABRIC LOOPS

Thomas O. Blair, 8026 SE. Powell Blvd., Portland, Oreg. 97206

Filed May 4, 1978, Ser. No. 902,893

Int. Cl.[2] A41H *1/00*; B23Q *3/15*; D05B *35/12*; G01B *5/16*

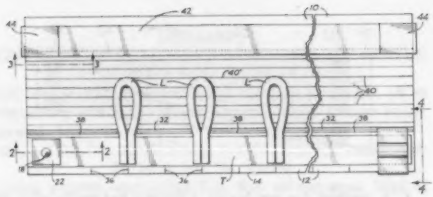
U.S. Cl. 156—378 **12 Claims**

1. Apparatus for securing a plurality of fabric loops of folded, everted fabric loop material at predetermined spaced-apart positions on an elongated strip of adhesive tape preliminary to transfer of the tape and secured loops to garment material for attachment of the loops to said garment material, the apparatus comprising:

(a) a laterally elongated plate having a transversely extending straight front edge,

(b) a transversely extending elongated stitching line indicator on the plate rearwardly of and parallel to the front edge of the plate,

(c) the laterally elongated area between the front edge and stitching line indicator defining a support area for an enlongated strip of adhesive tape,



(d) a pair of adhesive tape anchors on the plate arranged to secure the opposite ends of an elongated strip of adhesive tape removably to said support area of the plate, with the adhesive surface of the tape facing upward, and

(e) a transversely extending elongated loop size guide on the plate rearwardly of and parallel to the stitching line indicator for registering with said guide the closed ends of a plurality of said fabric loops of everted folded fabric loop material for indicating the size of fabric loops extending between the guide and stitching line indicator.

4,212,699

APPARATUS FOR ASSEMBLING PLANAR WORK PIECES

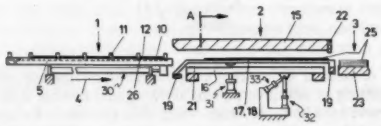
Hans-Georg Braunschweiler, Riniken, Switzerland, assignor to Georg Fischer Brugg - Oehler AG, Switzerland

Filed Aug. 17, 1978, Ser. No. 934,583

Claims priority, application Switzerland, Sep. 12, 1977, 11544/77

Int. Cl.[2] B27D *3/00*; B30B *15/30, 15/34*

U.S. Cl. 156—558 **7 Claims**



1. An apparatus for the assembly and adhering together of a plurality of substantially planar sheets of material, such as wood veneer, to form a unitary board therewith comprising:

an upper fixed press platen;

a lower press platen, said lower platen being vertically movable toward and away from said upper platen and shiftable in a direction substantially parallel with said upper platen;

a delivery table for receiving planar sheets of material with adhesive applied thereto, said table being movable to a position below said upper platen; and

fixation means for promoting curing of the adhesive between said upper and lower platens, said fixation means being vertically movable toward and away from said upper platen,

wherein said lower platen is shiftable in the direction of movement of said table, and

wherein the coefficient of friction of the upwardly facing surface of said lower platen is significantly greater than the working surfaces of said upper platen and said fixation means so that shiftable movement of said lower platen

when in contact with the planar sheets brings the adjacent planar sheets into an abutting relationship.

4,212,700

LABELING STATION

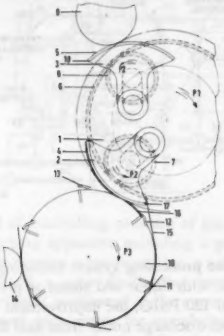
Rainer Buchholz; Rudolf Zodrow, both of Düsseldorf, and Reinhard Lohse, Haan, all of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,786

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740575

Int. Cl.² B65C *9/12*

U.S. Cl. 156—568 **3 Claims**



1. In a labeling station with a rotating gripper cylinder having gripper elements equally spaced therearound to define label divisions and a carrier rotating in the same sense bearing pickup elements thereon mounted for one of rotary or rocking movement in a contrary sense with respect to the carrier during the label transfer and which movement is controlled such that the receiving surfaces of the pickup elements roll at least in the leading area thereof against the gripper cylinder surface during rotation of the gripper cylinder, the improvement comprising: the arc length of the receiving surface of each pickup element being greater than the arc length of each label division of the gripper cylinder, means disposed on at least one of the gripper cylinder or the leading edges of the pickup elements for lifting the trailing portion of the label taken by the gripper cylinder away from the succeeding gripper elements to clear same for the next label to be taken, and means controlling each pickup element movement during the transfer of the trailing label area exceeding the label division of the gripper cylinder to lift away its receiving surface from the gripper cylinder surface.

4,212,701

PROCESS AND COMPOSITION OF LOW TOXICITY FOR PREPARING ALUMINUM SURFACES FOR ADHESIVE BONDING

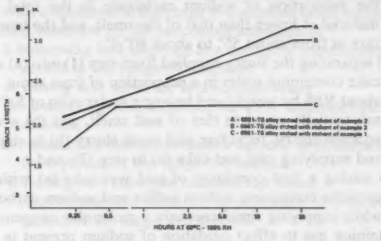
William J. Russel, Sparta, and Elizabeth A. Garnis, Franklin, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1979, Ser. No. 37,210

Int. Cl.² C23F *1/00*

U.S. Cl. 156—665 **5 Claims**

1. A process for adhesive bonding of aluminum parts, wherein the aluminum parts prior to bonding are subjected to an etching process to produce a surface preparatory to adhesive bonding, which comprises contacting the aluminum part with an etchant composition consisting essentially of about 25 to 35 weight percent sulfuric acid 96%



5 weight percent to saturated solution of ferric sulfate 75% 50 to 70 weight percent water.

4,212,702

PROCESS FOR RECOVERY OF CHEMICALS FROM PULPING WASTE LIQUOR

Saburo Mizuguchi; Isao Nomura, both of Tokyo; Takeyuki Naito; Masato Onodera, both of Yokohama, and Kouji Saito, Tokyo, all of Japan, assignors to Ebara Manufacturing Company, Limited, Tokyo, Japan

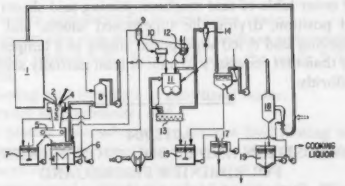
Continuation of Ser. No. 778,551, Mar. 17, 1977, Pat. No. 4,141,785. This application Aug. 30, 1978, Ser. No. 938,076

Claims priority, application Japan, Mar. 17, 1976, 51/28987; Mar. 17, 1976, 51/28988; May 18, 1976, 51/57135; Dec. 27, 1976, 51/156345; Dec. 27, 1976, 51/156346; Dec. 27, 1976, 51/156347

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.² D21C *11/02*

U.S. Cl. 162—36 **14 Claims**



1. A process for recovery of chemicals from sodium sulfite pulping waste liquor comprising the steps of:

(1) introducing and incompletely dissolving a smelt, obtained by burning a concentrated waste liquor and containing mainly sodium sulfide and sodium carbonate, in a large body of aqueous slurry which is circulated between a smelt receiving means and a smelt dissolving means, and said smelt is introduced into said aqueous slurry in said smelt receiving means, and wherein the amount of said circulating slurry is from 20 to 200 times by weight that of the smelt introduced in said smelt receiving means, and wherein said smelt receiving means comprises a smelt hopper and a screening means, and wherein lumps remaining after said smelt is introduced into said smelt hopper through which is circulated said body of aqueous slurry are separated from smaller solidified smelt particles by said screening means and said separated lumps are separately dissolved in make up water to form a weak green liquor, said large body of aqueous slurry comprising a solid phase the main component of which is sodium carbonate and a liquid phase the main component of which is aqueous sodium sulfide, adding to said body make up

water and a weak aqueous slurry recycled from step (2), and supplying a portion of the resulting aqueous slurry to step (2), maintaining the total solid content of said body of aqueous slurry at from about 35 to about 70% by weight, the proportion of sodium carbonate in the total solid material at lower than that of the smelt, and the temperature at from about 55° to about 90° C.;

(2) separating the slurry supplied from step (1) into (a) a wet cake containing water in a proportion of from about 10 to about 50% by weight and having a molar ratio of S/Na_2O substantially equal to that of said smelt, and (b) a weak aqueous slurry, recycling said weak slurry (b) to step (1), and supplying said wet cake (a) to step (3); and

(3) mixing a feed consisting of said wet cake (a) with hot particles containing sodium sulfite and sodium carbonate while supplying simultaneously a molecular oxygen-containing gas to effect oxidation of sodium present in said feed into sodium sulfite.

4,212,703

PROCESS FOR THE MANUFACTURE OF LAMINATED SHEETS OF CELLULOSIC AND POLYMERIC FIBROUS MATERIALS

Fabrizio D'Amico, San Donato Milanese; Giancarlo Serboli, Saronno, and Vincenzo Foti, Milan, all of Italy, assignors to Anic, S.p.A., Italy

Continuation of Ser. No. 541,341, Jan. 15, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,223

Claims priority, application Italy, Jan. 15, 1974, 19410 A/74

Int. Cl.[2] D21F *11/04*

U.S. Cl. 162—129 **3 Claims**

1. A process of manufacturing a laminated structure of cellulosic and polyolefinic fibrous materials comprising, forming a sheet of cellulosic fibers by feeding a pulp of said fibers to at least one of the inner tables of a multiple plane table cardboard manufacturing machine, forming a sheet of polyolefinic fibrids by feeding a pulp of said fibrids to an outer table of said machine, forming a composite sheet of cellulosic fibers and polyolefinic fibrids by feeding a pulp of said fibers and fibrids to the other outer table of said machine, joining said sheets in superposed position, drying the superposed sheets, and then hot calendering said dried superposed sheets at a temperature not lower than that necessary to melt at least partially said polyolefinic fibrids.

4,212,704

COMPOSITION AND PRODUCTION PROCESS FOR FOURDRINIER FIBERBOARD

Harry W. Durand, and Richard D. Bunker, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Continuation of Ser. No. 352,561, Apr. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 76,310, Sep. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 807,941, Mar. 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 697,634, Jan. 15, 1968, abandoned. This application Apr. 10, 1975, Ser. No. 566,973

Int. Cl.[2] D21H *3/28*

U.S. Cl. 162—175 **2 Claims**

1. An improved fourdrinier process for the fabrication of fiberboard, the steps of said process comprising:

(a) reacting ungelatinized starch and maleic anhydride in the amount of 0.05% to 6% anhydride based on dry starch to form a reaction slurry of modified starch while maintaining the pH of the reaction slurry in the range of 7 to 11;

(b) mixing fibers with said reacted ungelatinized starch reaction slurry whereby said reacted starch forms 6 to 15% of the total solids on a dry weight basis;

(c) forming the mixture of reaction slurry and fibers into a fiberboard; and

(d) drying said fiberboard at a temperature above the gelatinization temperature of said reacted starch.

4,212,705

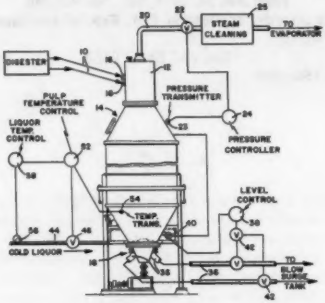
APPARATUS FOR RECOVERING HIGH PRESSURE STEAM FROM A BLOW TANK

William M. Babington, Jr., 1884 Buena Vista Dr., Coshocton, Ohio 43812, and Adam P. Bridge, 223 E. Second St., Franklin, Ohio 45005

Filed May 22, 1978, Ser. No. 908,124

Int. Cl.[2] D21C *7/08, 7/12, 11/06*

U.S. Cl. 162—238 **1 Claim**



1. In a cellulose processing system including a digester for treating cellulose with liquor and steam at pressures substantially in excess of 120 PSIG, the improvement comprising:

a high pressure, discharge outlet from said digester,

a high pressure blow tank for receiving treated cellulose, liquor and high pressure steam from said digester,

means for placing the interior of said blow tank in communication with said high pressure, discharge outlet of said digester,

means for withdrawing cellulose and liquor from said blow tank,

steam discharge valve means for withdrawing steam from said blow tank separately from said cellulose and liquor,

means for measuring pressure in said blow tank,

control means responsive to measured pressure in said blow tank to control said steam discharge valve means and said pressure in said blow tank at a preselected value in a range of 50 to 120 PSIG,

means for cleaning impurities from steam withdrawn from said blow tank through said steam discharge valve means,

means for pumping additional liquor into said blow tank separately from said cellulose, liquor and high pressure steam received from said digester,

first temperature sensing means associated with said blow tank for sensing temperatures therein,

second temperature sensing means for sensing the temperature of said additional liquor,

control means responsive to said first and second temperature sensing means for controlling the flow of said additional liquor into said blow tank,

said means for withdrawing cellulose and liquor from said blow tank including a perforated plate, a rotor mounted above said plate, a discharge line communicating with said perforated plate, and valve means associated with said discharge line,

means for sensing the level of cellulose and liquor in said blow tank,

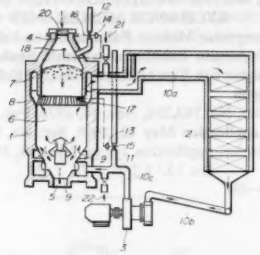
control means for controlling said blow tank discharge line valve means in response to levels sensed in said blow tank, and

means for spraying liquor into said blow tank to prevent bridging of cellulose therein.

4,212,706
METHOD OF CONTROLLING PRESSURE OF GAS CIRCULATING IN THE COKE DRY QUENCHING APPARATUS

Kunihei Koizumi, Yokohama; Tatu Otani, Yokosuka; Toshinobu Katata, Kanagawa, and Takeshi Ueda, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,458
Claims priority, application Japan, Jul. 13, 1977, 51-82479
Int. Cl.[2] C10B *39/02*
U.S. Cl. 201—39 **2 Claims**



1. A method of controlling pressure of gas circulating in a coke dry quenching apparatus including a quenching station having an upper portion, a lower portion, a coke charging port at the top thereof, a coke discharging port at the bottom thereof, a flue therein positioned in the upper portion thereof, and a blower and duct means for circulating quenching gas through said quenching station in a direction such that the gas flows from the lower portion of said quenching station to the upper portion thereof, said method comprising:

(a) controlling the speed of rotation of said blower means to control the flow rate of gas through said quenching station in response to the amount and temperature of the coke charges;

(b) controlling the pressure of the gas flowing through said quenching station such that the diverging point of the gas is fixed at said flue by measuring the pressure of the gas at said flue and adjusting the pressure at said flue such that the gage pressure is 0±5 mm Aq by venting gas from said quenching apparatus.

4,212,707
METHOD OF FABRICATING A COLLIMATOR FOR X AND GAMMA RADIATION

Christopher H. Tosswill, and Clinton J. Beuscher, both of Sturbridge, Mass., assignors to Galileo Electro-Optics Corp., Sturbridge, Mass.

Division of Ser. No. 725,835, Sep. 23, 1976, Pat. No. 4,125,776, which is a continuation-in-part of Ser. No. 558,899, Mar. 17, 1975, abandoned. This application Oct. 31, 1977, Ser. No. 846,882
The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.
Int. Cl.[2] C25D *5/54, 7/04*
U.S. Cl. 204—26 **5 Claims**

1. The method of fabricating a multiple chanel hard-radiation collimator having a plurality of parallel channels with center-to-center spacing in the range 0.3 to 10 mm and channel width in the range 0.1 to 7.5 mm from a multiple element lead glass mosaic substrate having a plurality of parallelly aligned, etchable core columns, said columns having center-to-center spacing in the range 0.3 to 10 mm, wherein the method comprises the successive steps of:

a. etching the cores of each of said columns to form said channels by the successive sub-steps of:

i. immersing said substrate in a 10% hydrobromic acid solution at a temperature in the range 75°–80° F.

ii. rinsing said substrate in deionized water, and

iii. drying said substrate,

b. electroless plating said substrate to form a nickel plating with a thickness in the range 4–6 microns on all surfaces of said substrate by the successive sub-steps of:

i. immersing said substrate in a detergent conditioner for a period in the range 2–5 minutes,

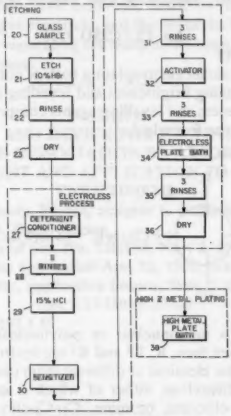
ii. rinsing said substrate in deionized water,

iii. immersing said substrate in 15% hydrochloric acid solution,

iv. immersing said substrate in a metallic colloidal solution for a period in the range 2–5 minutes,

v. rinsing said substrate in deionized water,

vi. immersing said substrate in a metallic activator for a period in the range 2–5 minutes,



vii. rinsing said substrate in deionized water,

viii. immersing said substrate in a uniform temperature, a nickel plating bath, for a period in the range 5–7 minutes,

ix. rinsing said substrate in deionized water,

x. drying said substrate, and

c. lead plating said substrate to form a lead plating with a thickness in the range 50 microns to 200 microns on all surfaces of said substrate by:

immersing said substrate in a lead plating bath, and for a period in the range 16–24 hours, alternatively driving a plating current having a density in the range 60 to 75 amps per square foot from an electrode in said bath to said substrate for 10 minutes and driving a deplating current from said substrate to said electrode for 5 minutes, said deplating current being 25% of said plating current.

4,212,708
GOLD-PLATING ELECTROLYTE

Nina A. Smagunova, ulitsa Mishina, 12, kv. 8; Nina M. Dyatlova, 2 Samotechny pereulok, 4, korpus 1, kv. 4; Alexandr Y. Fridman, Kirovogradskaya ulitsa, 24, kv. 76; Elena V. Shemyakina, Bolshoi Savvinsky pereulok, 19, kv. 3; Vera Y. Temkina, ulitsa Alabiana, 3, kv. 108; Ljudmila K. Nikerova, 3 Frunzenskaya ulitsa, 1, kv. 93, and Alexandr V. Belikin, ulitsa Vilisa Latsisa, 4, korpus 2, kv. 208, all of Moscow, U.S.S.R.

Filed Jun. 5, 1979, Ser. No. 45,848
Int. Cl.[2] C25D *3/48*
U.S. Cl. 204—46 G **2 Claims**

1. A gold-plating electrolyte containing the ingredients in the following proportions, g/l:

hexapotassium μ-ethylenediaminotetracetate bis(gold sulphite /I/): 10.5–123.0
an alkali metal salt of ethylenediaminotetracetic acid: 17.8–140.0
potassium sulphate: 12.6–110.0
potassium hydrogen phosphate: 4.7–40.0
water: the balance

4,212,709

ACIDIC NICKEL ELECTROPLATING BATH CONTAINING SULFOBETAINES AS BRIGHTENERS AND LEVELLING AGENTS

Manfred Patsch, Wachenheim; Dieter Schneider, Ludwigshafen; Guenther Gotsmann, Frankenthal, and Albert Hettche, Hessheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

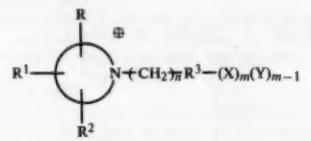
Filed May 11, 1979, Ser. No. 38,171

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825966

Int. Cl.² C25D *3/18*

U.S. Cl. 204—49 **2 Claims**

1. An acidic nickel electroplating bath of conventional composition, containing brighteners and levelling agents, wherein the said brighteners and levelling agents comprise one or more compounds of the formula I



I

where ◯N is a mononuclear or polynuclear heterocyclic-aromatic nitrogen base, R, R^1 and R^2 are hydrogen or C_1–C_4-alkyl, and may be identical or different from one another, R^3 is phenylene or thienylene, either of which is unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkyl, methoxy or ethoxy, X is $SO_3^{\ominus}$, Y is an alkali metal ion, ammonium ion or substituted ammonium ion or half of an alkaline earth metal cation or of a divalent transition metal cation, n is from 1 to 3 and m is from 1 to 2.5.

4,212,710

ELECTROCHEMICAL OXIDATION OF ALKYL AROMATIC COMPOUNDS

Mark A. Halter, Schaumburg, and Thomas P. Malloy, Lake Zurich, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 27, 1979, Ser. No. 52,645

Int. Cl.² C25B *3/02*

U.S. Cl. 204—78 **10 Claims**

1. In a process for the electrochemical oxidation of an alkyl aromatic compound, the improvement which comprises effecting said electrochemical oxidation in an electrochemical cell in the presence of an emulsion solution of said alkyl aromatic compound in an aqueous carboxylic acid medium containing a salt of a transition metal, and recovering the resultant oxidized aromatic compound.

4,212,711

ELECTROCHEMICAL OXIDATION OF ALKYL AROMATIC COMPOUNDS

Mark A. Halter, Schaumburg, and Thomas P. Malloy, Lake Zurich, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 27, 1979, Ser. No. 52,646

Int. Cl.² C25B *3/02*

U.S. Cl. 204—78 **13 Claims**

1. In a process for the electrochemical oxidation of an alkyl aromatic compound, the improvement which comprises effecting said electrochemical oxidation in an electrochemical cell in the presence of a semiemulsion solution of said alkyl aromatic compound in a dilute mineral acid solution containing a salt of a transition metal and recovering the resultant aldehyde.

4,212,712

PROCESS FOR THE ELECTROLYTIC TREATMENT OF ALKALI METAL HALIDE SOLUTION USING ION EXCHANGE MEMBRANES

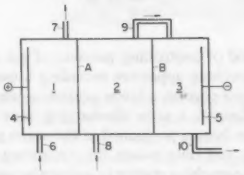
Naohiro Murayama; Makoto Fukuda; Teruo Sakagami; Shirou Suzuki; Yoshikazu Kokubu, and Toshio Enoki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 743,294, Nov. 18, 1976, Pat. No. 4,111,780. This application May 12, 1978, Ser. No. 905,468

Claims priority, application Japan, Nov. 19, 1975, 50-139074

Int. Cl.² C25B *1/16, 1/26*

U.S. Cl. 204—98 **6 Claims**



1. A continuous process of electrolyzing an alkali metal halide in an electrolytic bath assembly including an anodic chamber, an intermediate chamber, and a cathodic chamber arranged in series; said anodic chamber being separated from the intermediate chamber by a first cationic permselective membrane; and said cathodic chamber being separated from the intermediate chamber by a second cationic permselective membrane, said process comprising continuously introducing a concentrated aqueous alkali metal halide solution into the anodic chamber while continuously removing resulting dilute aqueous alkali metal halide solution therefrom, continuously introducing water or a dilute aqueous alkali metal hydroxide solution into the intermediate chamber, whereupon the alkali metal ions of the alkali metal halide pass through the first cationic permselective membrane and combine with the hydroxyl ions in the intermediate chamber to form alkali metal hydroxide, continuously transferring a part or all of the thus formed aqueous solution of alkali metal hydroxide in the intermediate chamber to the cathodic chamber, adjusting the concentration of the aqueous alkali metal hydroxide solution in the intermediate chamber to about from 10 to 20 weight percent and adjusting the concentration of the aqueous alkali metal hydroxide solution in the cathodic chamber to about from 30 to 50 weight percent, maintaining these concentrations in the respective intermediate and cathodic chambers to obtain a high concentration of alkali metal hydroxide and high current and power efficiency during the electrolysis, using as the first membrane a cationic permselective membrane which is durable to aqueous alkali metal hydroxide solution and gaseous chlorine, and has a current efficiency exceeding about 80%; and using as the second membrane a cationic permselective membrane which is durable to aqueous alkali metal hydroxide solution, has a low electrical resistance in aqueous alkali metal hydroxide solution, has a high selective penetration performance to alkali metal ions, and has a moderate water and hydrogen ion penetration performance.

4,212,713

ELECTROLYSIS OF AQUEOUS SOLUTION OF ALKALI METAL CHLORIDE

Manabu Suhara, and Kiyotaka Arai, both of Yokohama, Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,009
Claims priority, application Japan, Oct. 21, 1977, 52-125808
Int. Cl.[2] C25B *1/16, 1/26, 13/08*
U.S. Cl. 204—98 10 Claims

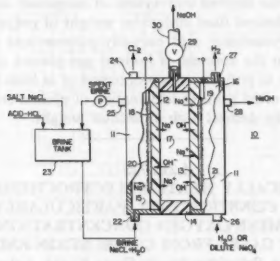
1. An electrolysis of an aqueous solution of an alkali metal chloride to produce an alkali metha hydroxide having a concentration of less than 30 wt.% and chlorine which comprises using a modified cation exchange membrane of a fluorinated polymer having essentially only carboxylic acid type ion exchange groups which has an ion exchange capacity of 1.1 to 2.0 meq/g.dry polymer and wherein one surface layer has a lower ion exchange capacity than that of the major portion of the membrane and is from 0.8 to 1.3 meq/g.dry polymer.

4,212,714

ELECTROLYSIS OF ALKALI METAL HALIDES IN A THREE COMPARTMENT CELL WITH SELF-PRESSURIZED BUFFER COMPARTMENT

Thomas G. Coker, Waltham; Anthony B. LaConti, Lynnfield; Edward N. Balko, Wilmington, and George B. McGray, Wakefield, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed May 14, 1979, Ser. No. 38,418
Int. Cl.[2] C25B *1/16, 1/26, 9/00, 13/08*
U.S. Cl. 204—98 21 Claims



7. A process for generating chlorine and caustic in a three compartment cell separated by two ion transporting membranes whih comprises electrolyzing an aqueous alkali metal chloride and water at anode and cathode electrodes separated by the ion transporting membranes, at least one of the electrodes taking the form of electrochemically active particles physically bonded to one of the membranes to form a unitary electrode membrane structure, operating the buffer compartment of the three compartment cell at a positive pressure differential with respect to the other compartments, pressurizing the buffer compartment solely by passing current through the cell to transport water into the buffer compartment with ions transported across the membranes so that the sole source of water for the buffer compartment is transported through the ion transporting membranes

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4,212,715

PROCESS FOR REDUCING LOSSES OF MERCURY IN ALKALI METAL CHLORIDE ELECTROLYSIS

Siegfried Benninger, Schwalbach, and Adolf Schmidt, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 942,266, Sep. 14, 1978, abandoned. This application Mar. 13, 1979, Ser. No. 20,086
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741985
Int. Cl.[2] C25B *1/36*
U.S. Cl. 204—99 5 Claims

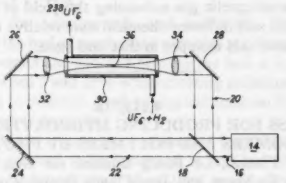
1. A process for reducing loss of mercury in an alkali metal chloride electrolysis plant operating according to the amalgamation process and including an open brine evaporation cooling system, which comprises adjusting the redox potential E_R of the brine to be evaporated so that the value of said redox potential is more than $1391-6.66\,(pH)-5.94\,(pH)^2$ millivolts, but not more than 1100 millivolts, based on the voltage of a standard hydrogen electrode, and the pH of the brine is of from 7.0 to 9.0; and evaporating the brine in the open brine evaporation cooling system.

4,212,716

METHOD AND DEVICE FOR EXCITATION AND SELECTIVE DISSOCIATION BY ABSORPTION OF LASER LIGHT AND APPLICATION TO ISOTOPIC ENRICHMENT

Paul Rigny, Sceaux, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 738,136, Nov. 2, 1976, Pat. No. 4,144,453. This application Apr. 13, 1978, Ser. No. 896,228
Claims priority, application France, Nov. 2, 1976, 75 34503
Int. Cl.[2] H01J *27/00*
U.S. Cl. 204—157.1 R 17 Claims



1. A method of excitation and of selective dissociation by absorption of the monochromatic light emitted by at least one high-power laser, wherein the excitation is effected by light sent from the laser at a frequency ν_1 into an isotopic mixture of gas molecules in which a certain number of said molecules exhibit transitions between two vibrational levels corresponding to a predetermined isotope and separated by an energy interval $\Delta E_1 = 2h\nu_1$ and wherein the molecules of a predetermined isotopic species are thus preferentially excited.

4,212,717

SEPARATION OF ISOTOPES BY PHOTO-INDUCED PREDISSOCIATION

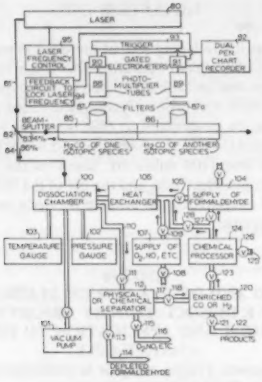
C. Bradley Moore; John H. Clark, both of Berkeley; Yehuda Haas, Kensington, all of Calif., and Paul L. Houston, Ithaca, N.Y., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 22, 1975, Ser. No. 643,325
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—158 R 13 Claims

1. A method for producing isotopically enriched material by photoexcitation of gaseous formaldehyde molecules in which at least one element is present as a plurality of isotopes, those said molecules which contain a first said isotope having a significantly greater tendency to absorb a given spectrum

range of light and to be raised to an excited electronic state and to be dissociated thereby, than do those said molecules which contain a second said isotope, comprising the steps of:

submitting said gaseous formaldehyde molecules to light in said given spectrum range and having a wavelength shorter than 330 nm in the presence of a stable paramagnetic gas not reactive with said gaseous formaldehyde molecules, to cause said molecules to be raised to said



excited electronic state, thereby dissociating said formaldehyde molecules containing said first isotope, said first isotope entering into a different stable chemical state,

physically separating the matter constituting said first isotope in its different chemical state from the remainder of said matter, and

said paramagnetic gas enhancing the yield of said first isotope in said different chemical state relative to production of other said isotopes in that said state.

4,212,718

PROCESS FOR PRODUCING HYDROXYTELECHELIC OLIGOMERS AND POLYMERS BY PHOTOLYSIS

Christian Pinazzi, Le Bourg Coulans sur Gee; Jean-Claude Lenain, Le Mans, and Jean-Claude Brosse, Connerre, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Continuation of Ser. No. 672,917, Apr. 2, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 897,074

Claims priority, application France, Apr. 4, 1975, 75 10621

Int. Cl.[2] C08F *2/46, 4/00*

U.S. Cl. 204—159.23 **31 Claims**

1. A polymerization process in which an ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, a lower alkyl acrylate, a lower alkyl methacrylate, acrylamide, vinyl pyrrolidone, vinyl acetate, acrylonitrile, and methacrylonitrile is polymerized by the radical route to form hydroxytelechelic polymers having a multi-modal distribution of molecular weights and including polymers having a number average molecular weight between about 100 and 1 million, said polymerization process comprising effecting the polymerization at room temperature in the presence of oxygen under the effect of ultra-violet radiation having a wave length capable of causing the homolytic splitting of perhydrol into hydroxyl radicals of at least one of said monomers in a reaction mixture including at least about 10% by weight of said monomer and about 1 to about 20% by weight of hydrogen peroxide, and the remainder of the reaction mixture consisting essentially of an alcohol, wherein said alcohol is a good solvent for said hydrogen peroxide and said monomer and a bad solvent for said polymer.

4,212,719

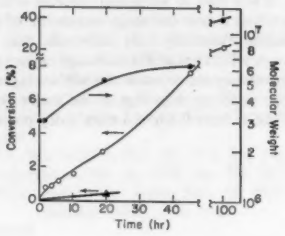
METHOD OF PLASMA INITIATED POLYMERIZATION

Yoshihito Osada, Yokohama, Japan; Alexis T. Bell, Oakland, and Mitchel M. Shen, Piedmont, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 882,124, Feb. 28, 1978, abandoned. This application Aug. 18, 1978, Ser. No. 934,855

Int. Cl.[2] C08F *2/52*

U.S. Cl. 204—165 **32 Claims**



1. A method of plasma initiated polymerization, comprising the steps of:

(a) establishing and maintaining a contained zone of ionized gas plasma in contact with a surface of continuous solid or liquid volume of substantially unpolymerized monomer, said ionized gas phase being established and maintained by an electric field which creates a path of electrical conduction totally within said contained zone,

(b) commencing propagation polymerization of said monomer volume by the creation of active polymerization sites at the interface between said gas plasma and monomer volume caused by activation derived from said ionized gas plasma to partially polymerize said monomer,

(c) terminating contact between said partially polymerized monomer volume and ionized gas plasma substantially prior to the desired conversion of monomer to polymer and the desired final molecular weight of polymer, and

(d) postpolymerizing said partially-polymerized monomer volume in the absence of ionized gas plasma to convert monomer to polymer in a proportion of at least two times that converted prior to termination of plasma contact and to yield the desired high molecular weight.

4,212,720

ELECTRICALLY HEATED ELECTROCHEMICAL SENSOR CONSTRUCTION, PARTICULARLY TO DETERMINE OXYGEN CONCENTRATION IN EXHAUST GASES FROM COMBUSTION ENGINES

Helmut Maurer, Schwieberdingen; Franz Rieger, Aalen-Wasseralfingen; Ernst Linder, Mühlacker, and Rainer Schüssler, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,700

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732743

Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S **8 Claims**

1. Electrically heated electrochemical sensor to determine the oxygen concentration in gases, particularly in combustion exhaust gases, especially from internal combustion engines, comprising the combination of

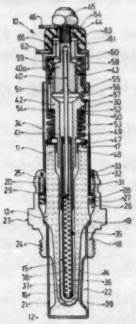
a housing (**18**);

a tubular solid electrolyte body (**11, 68**) secured in the housing; with

an electrical heating element (**35, 35'**) in heat exchange relation with the solid electrolyte body which comprises

a thin-walled, closed metal sleeve (37, 37') coaxially located internally within said body;

a good heat conductive, electrically insulating material (38, 38') packed in the sleeve;



and a resistance wire spirally located within the tube and embedded in said insulating packing.

4,212,721

EQUIPMENT FOR REGULATING, MONITORING, OPTIMIZING AND OPERATING, AND FOR DISPLAYING DATA IN, ALKALI METAL CHLORIDE ELECTROLYSIS PLANTS

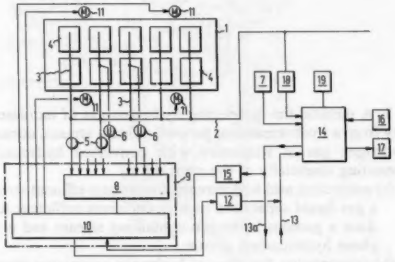
Dieter Bergner, Kelkheim; Erhard Heubach, Sulzbach; Winfried Hofmann, Kelkheim; Ortwin Küster, Hofheim am Taunus, and Lothar Pelz, Rödermark, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,444

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729732

Int. Cl.[2] C25B *15/02, 15/04, 9/00*

U.S. Cl. 204—219 **6 Claims**



1. Apparatus for controlling, monitoring and operating, and for displaying data in, alkali metal chloride electrolysis plants which are operated by the amalgam process, comprising a plurality of groups of electrolytic cells, each group including m cells wherein m is an integer; a plurality of microcomputer control means, each associated with a respective group of electrolytic cells, each said microcomputer control means comprising sensing means for sensing variables representing the operating conditions of said cells in said group to monitor the operation of said cells, and processing means responsive to said sensing means for controlling the operation of said cells in said group such that said cells operate in accordance with the most effective operating conditions; and a central processing computer means common to all of said microcomputer control means, said central processing computer means being connected to each said microcomputer control means for displaying data associated with all of said groups of cells and for supplying to each of said microcomputer control means data representing the overall operation of all of said groups of cells.

4,212,722

APPARATUS FOR ELECTROWINNING METAL FROM METAL BEARING SOLUTIONS

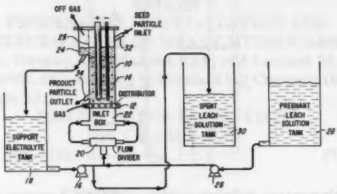
Michael M. Avedesian, Beaconsfield, and Anthony P. Holko, Mount Royal, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Division of Ser. No. 793,776, May 4, 1977, Pat. No. 4,141,804. This application Nov. 14, 1978, Ser. No. 960,632

Claims priority, application Canada, May 11, 1976, 252269

Int. Cl.[2] C25D *21/18;* **C25B** *15/08;* **C25C** *5/02, 7/00*

U.S. Cl. 204—222 **9 Claims**



1. An apparatus for continuously electrowinning metal from leach solutions comprising:

(a) at least one cell having a grid supporting a bed of particulate conducting particles;

(b) means for uniformly distributing and continuously recirculating a support solution of predetermined metal concentration through said bed of conducting particles at a sufficiently high flow rate to fluidize and expand said bed by about 5 to 25%;

(c) means for continuously and uniformly feeding gas through the bed of conducting particles at a flow rate such as to contract the bed and operate the bed at low expansion between 5 and 25% while creating an intense particle agitation to maintain good mixing and uniform fluidization of the bed of particles;

(d) an electrode arrangement suspended from the top of the cell and adapted to be immersed in said bed of fluidized particles and consisting of at least one cathode feeder electrode adapted to come in physical contact with the fluidized particles during fluidization to make the particles cathodic and so cause the metal ions to deposit on the particles, and at least one anode electrode separated from the cathodic particles by a membrane which allows the free passage of ions while preventing physical contact with the particles; and

(e) means for adding small seed particles at the top of the cell and means for withdrawing large product particles from the bottom of the cell so as to make the apparatus work continuously or semi-continuously.

4,212,723

COUNTERFLOW EXTRACTION COLUMN

Helmut Schmieder, Karlsruhe; Hubert Goldacker, Linkenheim; Ernst Warnecke, Ladenburg; Manfred Kluth, Neuthard, and Reinhard Schlenker, Eggenstein, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 943,979

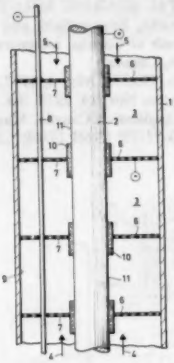
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743045

Int. Cl.[2] C25B *15/08, 11/03*

U.S. Cl. 204—272 **5 Claims**

1. In a counterflow extraction column for the liquid-liquid extraction of two phases during simultaneous electrolysis;

including an elongated, upright column tube containing a cathode and an anode; the improvement wherein said anode is a bar extending within said tube coaxially therewith and said cathode is formed of a plurality of spaced perforated plates centrally supported by the anode bar; the improvement further



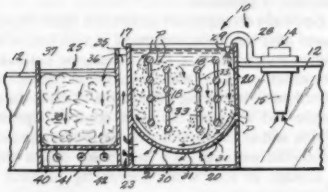
comprising means defining, within said tube, a common chamber defining cathodic zones and anodic zones and being void of separating members between said zones; said common chamber constituting an anode chamber and a cathode chamber; and insulating means for electrically insulating each said perforated plate from said anode bar.

4,212,724

OXIDATION AND COAGULATION FOR AQUARIUM APPLICATIONS

Karl Moeglich, Dunedin, Fla., assignor to Innova, Inc., Clearwater, Fla.

Filed Nov. 21, 1978, Ser. No. 963,940
Int. Cl.[2] C02B 1/82
U.S. Cl. 204—273 **16 Claims**



1. A water purification assembly comprising
means for withdrawing water from a water source;
means for effecting oxidation and coagulation of metabolites in the water; said means comprising a chamber into which said withdrawing means feeds water; a plurality of naked electrodes disposed in said chamber and connected up to a source of e.m.f., the electrodes being stationary with respect to each other; a plurality of electrically conductive particles each with a relatively large surface area configuration disposed in said chamber; means for violently continuously circulating said particles within said chamber so that they continuously impact all of the electrodes; and means for preventing movement of said electrically conductive particles out of said chamber;
an outlet from said chamber; and
means connected to said chamber outlet for mechanically separating particles and coagulants from the water, and then returning the now purified water to the water source.

4,212,725

ELECTRODES FOR ELECTROLYSIS PURPOSES

Wolfgang Habermann, Mainz; Peter Thoma, Frankenthal, and Klaus Wintermantel, Dossenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 955,580
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750029
Int. Cl.[2] C25B 11/08, 11/10, 1/26
U.S. Cl. 204—290 F **9 Claims**

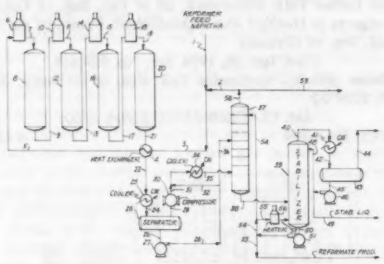
5. An anode for the electrolysis of alkali metal chlorides which comprises:
(a) an alloy of niobium and a metal of the iron group, said iron group metal being present in the alloy in the amount of from 0.5 to 10% by weight;
(b) tantalum, tantalum boride, tantalum carbide or an alloy of tantalum and a metal of the iron group, said alloy containing from 0.5 to 10% by weight of the metal of the iron group; and
(c) a metal of the platinum group applied to the surface of the anode, the content of the platinum metal being from 0.25 to 1.5 g/m^2 of anode surface.

4,212,726

METHOD FOR INCREASING THE PURITY OF HYDROGEN RECYCLE GAS

Warden W. Mayes, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

Filed Nov. 23, 1977, Ser. No. 854,378
Int. Cl.[2] B01D 47/00; C10G 39/00
U.S. Cl. 208—101 **23 Claims**



1. A method for recovering hydrogen gas of increased purity from a hydrotreatment process effluent stream, containing hydrogen gas in admixture with converted hydrocarbons, consisting essentially of the steps of:
(a) subjecting said hydrotreatment process effluent stream to a gas-liquid separation under conditions sufficient to produce a gaseous hydrogen-containing stream and a liquid phase hydrocarbon stream;
(b) compressing the gaseous hydrogen-containing stream to a pressure above that of said gas-liquid separation step;
(c) admixing the compressed gaseous hydrogen-containing stream with a first portion of the liquid phase hydrocarbon stream obtained in said gas liquid separation and cooling the resulting admixture;
(d) thereafter countercurrently contacting said compressed gaseous hydrogen-containing stream in a first countercurrent extraction step with a first absorber liquid comprising at least a second portion of the liquid phase hydrocarbon stream recovered in said gas-liquid separation, and in a second countercurrent extraction step with a second absorber liquid under conditions sufficient to produce a first product stream of relatively pure hydrogen;
(e) subjecting a combined stream of said first and second absorber liquids exiting from said countercurrent contacting steps to distillative stabilization under conditions sufficient to remove a light hydrocarbon overhead stream and

to produce a second product stream of heavier stabilized converted hydrocarbons; and

(f) recycling at least a portion of said second product stream to said second countercurrent extraction step as said second absorber liquid.

4,212,727

PROCESS FOR THE SIMULTANEOUS PRODUCTION OF A HIGH OCTANE MOTOR FUEL AND ISOBUTANE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 2, 1979, Ser. No. 850
Int. Cl.[2] C07C *9/12*; C10G *35/06, 13/10*; B01J *29/12*
U.S. Cl. 208—111 3 Claims

1. A process for the simultaneous production of a high octane motor fuel and isobutane which comprises the steps of:

(a) contacting a hydrocarbon boiling at a temperature of less than about 450° F. and containing cyclic components including aromatics with hydrogen in a reaction zone, containing a commingled physical mixture of a first catalytic composite comprising palladium component and a zeolitic aluminosilicate carrier material and a second catalytic composite comprising alumina, platinum and a platinum promotor selected from the group of rhenium, tin, germanium, cobalt, nickel, iridium, rhodium and ruthenium or combinations of these promoters, at a temperature in the range of about 700° F. to about 1100° F. and at a pressure of from about 100 to about 700 psig.; and

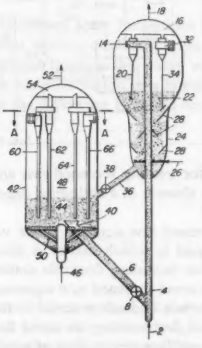
(b) recovering a high octane motor fuel and isobutane from the resulting reaction zone effluent.

4,212,728

CATALYTIC CRACKING OF HYDROCARBONS

Edward J. Demmel, Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 683,115, May 4, 1976, abandoned. This application Mar. 17, 1978, Ser. No. 887,575
Int. Cl.[2] C10G *11/04*; C01B *29/12*; B01J *8/24*
U.S. Cl. 208—121 10 Claims



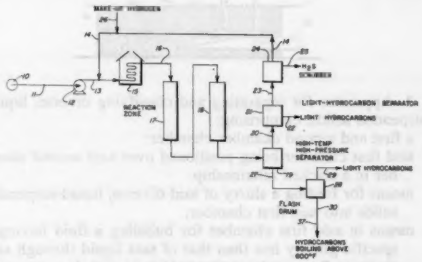
1. An improved method for adding a minute amount of at least one combustion-promoter-metal selected from the group consisting of Pt, Pd, Rh, Ru, Ir, Os and Re to the circulating inventory of cracking catalyst contained in the catalyst section of a fluid catalytic cracking plant, said catalyst section comprising a reactor with a stripping zone, a regenerator wherein coke is combusted with the formation of CO and CO_2, a coked catalyst conduit for passing coked catalyst from said reactor to said regenerator and a regenerated catalyst standpipe for passing regenerated catalyst from said regenerator to said reactor, said circulating inventory of catalyst being at temperatures substantially higher than 600° F., which method comprises flowing a continuous side-stream from said circulating inventory of cracking catalyst through a contact zone and back to said inventory, and contacting said side stream in said contact zone at a temperature of less than about 600° F. with a solution of a compound of said metal dissolved in a solvent boiling above about 140° F. but below 600° F., or with the vapor or an aerosol of said metal, whereby adding to said circulating inventory an amount of combustion-promoter-metal effective to control the combustion of CO in said regenerator without substantially adversely affecting the cracking in said reactor.

4,212,729

PROCESS FOR DEMETALLATION AND DESULFURIZATION OF HEAVY HYDROCARBONS

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 26, 1978, Ser. No. 928,141
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—210 37 Claims



1. A process for the hydrodemetallation and hydrodesulfurization of a hydrocarbon feedstock containing asphaltenes and a substantial amount of metals, said feedstock comprising at least one member selected from the group consisting of crude oil, topped crude oil, petroleum hydrocarbon residua, oils obtained from tar sands, residua derived from tar sands oil, and hydrocarbon streams derived from coal, which process comprises:

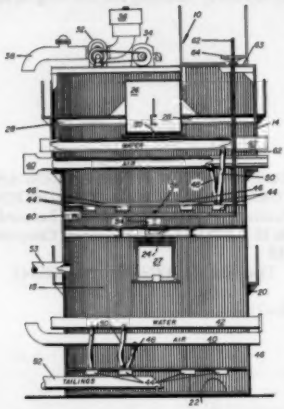
(a) contacting said feedstock in a first reaction zone with hydrogen and a first-stage catalyst comprising hydrogenation metal component selected from the group consisting of a Group VIB metal, a Group VIII metal, and a mixture of said Group VIB and Group VIII metals, and a porous inorganic oxide support, said hydrogenation metal being in at least one form selected from the group consisting of the elemental form, the oxide, and the sulfide, and said catalyst having a surface area of about 120 m^2/gm to about 400 m^2/gm, a pore volume of about 0.7 cc/gm to about 1.5 cc/gm, and an average pore diameter of about 125 A to about 350 A; and

(b) contacting the effluent from said first reaction zone in a second reaction zone with a second-stage catalyst consisting essentially of at least one active original hydrogenation metal selected from Group VIB deposed on a catalytically active support comprising alumina, said Group VIB metal being in at least one form selected from the group consisting of the elemental form, the oxide, and the sulfide, said catalyst having a surface area within the range of about 150 m^2/gm to about 300 m^2/gm, having a majority of its pore volume in pore diameters within the range of about 80 A to about 130 A, and a pore volume within the range of about 0.4 cc/gm to about 0.9 cc/gm.

4,212,730
APPARATUS FOR SEPARATING AND CLASSIFYING DIVERSE, LIQUID-SUSPENDED SOLIDS

George C. Brooks, 1414 Collins La., and James R. Brown, 932 Wedgewood La., both of Lakeland, Fla. 33803

Filed Mar. 17, 1978, Ser. No. 887,498
Int. Cl.[2] B03D 1/14
U.S. Cl. 209—168 11 Claims



1. Apparatus for separating and classifying diverse, liquid-suspended solids, comprising:

a first and second chamber chamber;

said first chamber being positioned over said second chamber in a stacked relationship

means for feeding a slurry of said diverse, liquid-suspended solids into said first chamber;

means in said first chamber for bubbling a fluid having a specific gravity less than that of said liquid through said slurry to float predetermined solids in said slurry upward in said first chamber;

means for feeding said slurry from said first chamber into said second chamber;

means in said second chamber for bubbling said fluid through said slurry in said second chamber to float said predetermined solids therein upwards in said second chamber;

slurry feeding means coupling said first chamber with said second chamber, whereby said slurry may be gravity fed out of said first chamber into said second chamber; and

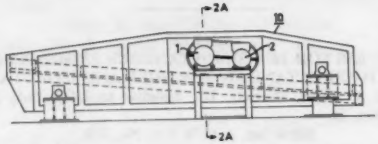
means for controlling the flow of such slurry through such slurry feeding means, said means for controlling the flow of such slurry having a plug in said slurry feeding means, and means for moving said plug into and out of the flow of said slurry between said first and second chambers.

4,212,731
DRIVE DEVICE WITHOUT TRANSMISSION FOR PRODUCING AN ELLIPTICAL SHAKING MOVEMENT

Hans-Henrik B. Wallin, Smedjebacken, and Eric R. Ericsson, Ludvika, both of Sweden, assignors to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Jul. 7, 1978, Ser. No. 922,597
Claims priority, application Sweden, Jul. 13, 1977, 7708140
Int. Cl.[2] B07D 1/44
U.S. Cl. 209—366.5 3 Claims

1. Drive device for producing an elliptical oscillating movement in a spring-suspended apparatus, said drive device comprising two oscillation masses eccentrically arranged around individual axes of rotation and rotatable in opposite directions, the product of mass and distance to the respective axis of rotation being different for the two oscillation masses, characterized in that the two oscillation masses are each rotatably arranged independently of the other and are coupled to individual motors with the same nominal rotational speed, and that the center of gravity of the suspended device lies on an Apollonios' circle to the axes of rotation, so determined that the

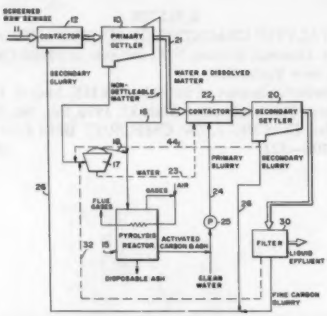


ratio of the distances from the center of gravity to the axes of rotation is inversely proportional to the products of the weights of the respective oscillation masses and their mean distance to the respective axis of rotation.

4,212,732
RAW LIQUID WASTE TREATMENT PROCESS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Marshall F. Humphrey, Duarte, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 549,417, Feb. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 390,467, Aug. 22, 1973, abandoned. This application Jan. 3, 1978, Ser. No. 866,271
Int. Cl.[2] C02B 1/14, 3/00; C02C 5/02
U.S. Cl. 210—32 12 Claims



1. A process for treating screened raw aqueous waste, characterized by the absence of a biological digestion stage, including the steps of:

receiving screened raw aqueous waste which comprises an aqueous liquid in which matter is dissolved and nondissolved matter including floatable matter;

mixing the received screened raw aqueous waste with a used activated carbon and ash material to form a first mixture;

permitting said first mixture to stand for a predetermined period for enabling the settling of nondissolved matter in said aqueous liquid, together with the used activated carbon and ash material to form a primary sludge with said floatable matter floating on top of said liquid;

separating the liquid in which matter remains dissolved, representing a first effluent, from said primary sludge and said floatable matter;

pyrolyzing said primary sludge to form fresh activated carbon and ash material;

mixing at least some of the fresh activated carbon and ash material with said first effluent to form a second mixture;

permitting said second mixture to stand for a predetermined interval to enable the fresh activated carbon and ash material therein to adsorb matter in said first effluent, and to thereafter settle as a used carbon and ash material;

separating said settled used carbon and ash material from the rest of said second mixture; and

transferring the separated used carbon and ash material for direct mixing with said received screened raw aqueous waste.

4,212,733

OIL-WATER SEPARATION FILTERS

Yuzuru Goto, Soka; Yukitaka Daigo, Kasukobe, and Mikio Hitotsuyanagi, Soka, all of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 666,998, Mar. 15, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 865,751

Int. Cl.² C02B 9/02

U.S. Cl. 210—36 **12 Claims**

7. A process for separating oil from water containing oil, which comprises flowing the water containing oil through an oil-water separation filter comprising (1) a porous material comprising a sintered polyethylene powder bonded to (2) a fibrous layer having a thickness of about 0.5 to about 5 mm and a porosity of about 70 to about 90% comprising fibers having a water content of about 0.4 to about 5%, a critical surface tension of about 25 to about 45 dyne/cm and a fiber diameter of about 5 to about 30μ or a mixture of said fibers and fibers having a water content of about 8 to about 15% and a fiber diameter of 5 to about 30μ.

4,212,734

INHIBITING SCALE WITH AMINO-PHOSPHONIC-SULFONIC ACIDS

Derek Redmore, Ballwin, and Frederick T. Welge, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

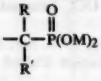
Division of Ser. No. 442,778, Feb. 15, 1974, Pat. No. 4,085,134. This application Dec. 16, 1977, Ser. No. 861,398

Int. Cl.² C02B 5/06

U.S. Cl. 210—58 **11 Claims**

1. A process of inhibiting scale formations in a system in which there is present water containing scale forming compounds which comprises treating the water with an amount effective to diminish scale formation of a compound which is an amine containing the following nitrogen-bonded groups:

$-(CH_2)_3SO_3M$ and



wherein R and R′ are hydrogen or an alkyl or aryl group and M is hydrogen or a salt moiety, the nitrogen to which the groups are bonded being amino nitrogen of the amine, the salt moiety being an alkali metal, an alkaline earth metal, ammonium or ammonium form of an amine, the compound in acid form having the

$-(CH_2)_3SO_3H$ and

as the sole acidic groups, the compound with hydrogen in place of said groups being an amine in which said nitrogen is amino nitrogen.

4,212,735

DESTRUCTION METHOD FOR THE WET COMBUSTION OF ORGANICS

Richard A. Miller, Knoxville, Tenn., assignor to Hydroscience, Inc., Emerson, N.J.

Filed Mar. 1, 1979, Ser. No. 16,645

Int. Cl.² C02C 5/04

U.S. Cl. 210—63 R **17 Claims**

1. In a method for the oxidation of organic compounds in an aqueous system of pH not more than about 4 to reduce the total organic content of the system, the method comprising oxidizing the organic compound by contacting at a sufficient temperature to effect oxidation of the compound with an oxidizing agent in the aqueous system in the presence of a catalytic amount of a cocatalyst system, the improvement comprising increasing the rate of oxidation of the organic compound by using as the cocatalyst system a catalytic combination of:

(1) a catalytic amount of nitrate ions,

(2) at least one of either bromide ions or iodide ions in an amount of at least about 0.001 molar, and

(3) transition metal ions of at least one transition metal having two or more oxidation states in an amount of at least about 10 ppm.

4,212,736

PRODUCTION OF METAL POWDER

John J. Dunkley, Bedford, England, assignor to Davy-Loewy Limited, Sheffield, England

Filed Sep. 22, 1978, Ser. No. 944,729

Claims priority, application United Kingdom, Sep. 22, 1977, 39557/77

Int. Cl.² B01D 37/00

U.S. Cl. 210—73 R **3 Claims**

1. In a method of treating metal powder produced by the water atomization of liquid metal in an atomizing vessel, the improvement comprising the steps of:

delivering a slurry of powder and water from the atomizing vessel to a settling tank,

gravity settling the powder on to a filter bed adjacent the base of the tank,

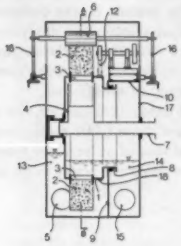
removing excess water above the surface of the powder, and

applying a differential pressure between the surface of the powder and the underside of the filter bed so as to expel residual water through the filter bed.

4,212,737
PROCESSES AND APPARATUS FOR REMOVING SUSPENDED MATTER FROM SUSPENSIONS BY FILTRATION THROUGH FOAMS

Hans Dancher, Ludwigshafen; Manfred Dressel, Lambsheim; Klaus Hess, Bad Durkheim, and Hubert Engelhardt, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,720
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712414
Int. Cl.[2] B01D *33/10*
U.S. Cl. 210—77 2 Claims



1. A continuous process for removing suspended solid particulate matter from at least partially aqueous liquid suspensions by filtering through a resilient foam of polyurethane blown with water vapor, without interrupting the continuous flow of said suspensions by regenerating the particle-laden foam, comprising:

(a) disposing the foam in a filtration zone so as to separate spatially the suspension and the filtrate afterwards produced;

(b) conveying the foam mechanically through the filtration zone to encounter the suspension moving therethrough, thereby entrapping the suspended solid particulate matter on and in said foam and absorbing substantially only said at least partially aqueous liquid into said foam;

(c) conveying the suspension-laden foam out of the filtration zone;

(d) cleaning the surface of the laden foam by lifting off and removing the suspended matter resting on the foam;

(e) then expressing the aqueous liquid held in said laden foam, the suspended matter deposited in the foam being substantially flushed out and removed as a concentrate; and

(f) conveying the cleaned and expressed foam back into the filtration zone.

2. Apparatus for continuously removing suspended particulate matter from at least partially aqueous liquid suspensions by filtering through a resilient foam of polyurethane blown with water vapor, without interrupting the continuous flow of said suspensions by regenerating the particle-laden foam, comprising:

means for absorbing substantially only said at least partially aqueous liquid and entrapping said particulate matter, including a rotatably mounted drum, which is covered on its outer cylindrical surface with superposed layers of said foam of polyurethane blown with water vapor, said layers having different pore widths, so as to be permeable to at least partially aqueous suspensions in a radial direction, which drum is closed at one of its faces and which has its axis of rotation horizontally disposed so as to dip partially into said suspension flowing through said apparatus during operation;

a roller, which is adjustable radially to the drum, disposed above the drum for expressing the foam when laden with suspended matter and liquid during operation of the apparatus;

a trough located inside the drum to collect the expressed concentrate of suspended matter produced by the action of said roller;

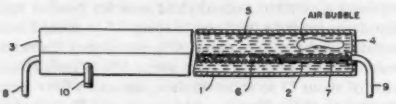
a line connected with said trough for removing said concentrate from the trough and passing through the open face of the drum; and

partitions providing means to keep the suspension separate from the purified liquid and which make a water-tight fit with the open face of the drum.

4,212,738
ARTIFICIAL KIDNEY

Werner Henne, Wuppertal, Fed. Rep. of Germany, assignor to Akzo N.V., Arnhem, Netherlands

Filed Mar. 23, 1978, Ser. No. 889,401
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713603; Sep. 17, 1977, 2741888
Int. Cl.[2] B01D *31/00*; A61M *1/03*
U.S. Cl. 210—94 17 Claims



1. A portable artificial kidney comprising a flexible hollow retentate chamber for the passage of blood formed by at least one dialysis membrane, and a flexible dialysate chamber formed by a jacket displaced outwardly and surrounding said at least one dialysis membrane, the volume of said retentate chamber being about 3 to 50 cm^3 and the volume of said dialysate chamber being about 300 to 5,000 cm^3 with the proviso that the volume of the dialysate chamber is at least about 40 times the volume of the retentate chamber, said dialysate chamber having at least one closable opening for filling or discharging a dialysate liquid and said retentate chamber having blood feed and outlet lines passed through said jacket in fluid-tight relationship, the combined dialysate and retentate chambers being sufficiently flexible to be conformed to a part of the human body and said dialysate chamber being only partially filled with dialysate liquid to provide a gas bubble which is sufficiently large to ensure liquid flow along the dialysis membrane with each natural movement of the body.

4,212,739
DISPOSABLE FILTER CANISTER AND HOUSING

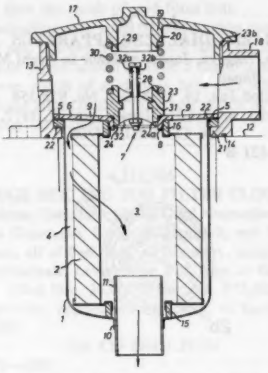
Brian T. Hilton, Norwich, and Paul Staff, Brandon, both of England, assignors to UCC International Limited, Thetford, England

Filed Jun. 30, 1978, Ser. No. 920,821
Claims priority, application United Kingdom, Jul. 4, 1977, 27991/77
Int. Cl.[2] B01D *27/10*
U.S. Cl. 210—130 7 Claims

1. A filter assembly for fitting to an aperture in the wall of an oil tank of a hydraulic system, comprising in combination:

a separable, disposable filter canister comprising a shell having regions defining a first end wall and regions defining a generally cylindrical side wall, an end plate attached to said shell and defining a second end wall, a tubular filter element fluid-tightly fitted between said first and second end walls to define an outer chamber and an inner chamber between which the only flow path is through said filter element, first regions of said end plate defining a central aperture communicating with said inner chamber and second regions of said end plate defining apertures disposed in a ring about said central aperture and communicating with said outer chamber, and regions of said first end wall defining an aperture communicating with said inner chamber;

a filter head dimensioned to receive said canister and fluid-tightly fitted to the outer face of said tank wall in register with said aperture in said tank wall and having an interior space in fluid communication with said ring of apertures in said canister, a port communicating with said interior space for connection thereto of an oil suction or return pipe, and a fluid-tight cap which is removable to allow said canister to be withdrawn; and



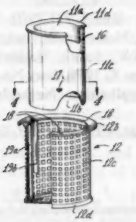
means for supporting said canister in a predetermined axial position relative to said tank wall with said first end wall and at least a major portion of said side wall with in said tank, said supporting means comprising an outwardly projecting member associated with said canister and a cooperating portion of the inner wall of said filter head on which said outwardly projecting member seats so that said canister is suspended by said supporting means from said filter head thereby permitting the canister to be removed as a unit.

4,212,740

FLOATING WEIR AND STRAINER BASKET CONSTRUCTION

Nat Greene, Los Angeles, Calif., assignor to KDI American Products, Inc., North Hollywood, Calif.

Filed Jun. 2, 1978, Ser. No. 911,713
Int. Cl.[2] E04H *3/20*
U.S. Cl. 210—169 **5 Claims**



1. A floating weir and strainer basket combination for use with a swimming pool skimmer device and the like, the device having a tank adapted to receive the floating weir and strainer basket in telescoping relation with each other, said combination comprising:

an open-ended floating weir having a top end with a flange, a bottom end, and an intermediate wall;

a strainer basket having an open top end with a flange, and a closed but perforated bottom; and

retaining means associated with said floating weir and said strainer basket, for disengageably retaining said weir in said basket, to prevent inadvertent disassociation of said weir from said basket while permitting free telescoping movement of said weir in said basket, wherein said retaining means for disengageably retaining said weir in said basket includes

a plurality of projections disposed on the outer surface of said intermediate wall of said floating weir,

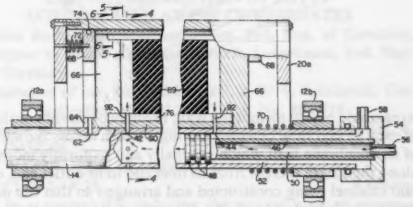
a plurality of corresponding notches disposed on an inside periphery of said strainer basket flange, whereby said weir is inserted in said basket by aligning said projections and notches, and is prevented from subsequent inadvertent removal by rotation of said weir to move said projections and notches out of alignment and grooved rib means affixed inside said strainer basket and extending down from at least one of said notches to prevent realignment of said notches and projections.

4,212,741

BLOOD PROCESSING APPARATUS

Robert C. Brumfield, 455 S. Oakland Ave., Pasadena, Calif. 91101

Filed Apr. 10, 1978, Ser. No. 895,237
Int. Cl.[2] B01D *31/00, 33/06;* A61M *1/03*
U.S. Cl. 210—241 **13 Claims**



1. In blood treating apparatus of the type having a rotor with peripheral wall through which mass transfer may occur and journaled for rotation in a surrounding casing, first means for supplying blood to the interior of the casing at a first locus, second means for discharging the blood from the casing at a second locus after a desired angular residence with the rotor, and third means for supplying a second fluid, such as oxygen or a dialysate, to the interior of the rotor, the improvements in combination comprising;

(a) said third means including a hollow shaft rotatably supporting the rotor,

(b) means for delivering said second fluid to one end of said shaft for axial flow through the rotor, and

(c) means for discharging said second fluid from the same end of said shaft after flowing through the rotor.

4,212,742

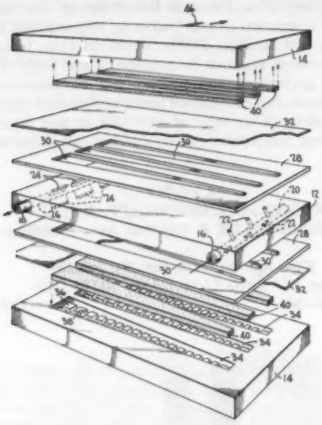
FILTRATION APPARATUS FOR SEPARATING BLOOD CELL-CONTAINING LIQUID SUSPENSIONS

Barry A. Solomon, Bedford, and Michael J. Lysaght, Waltham, both of Mass., assignors to United States of America, Washington, D.C.

Filed May 25, 1978, Ser. No. 909,459
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—247 **7 Claims**

1. In a filtration apparatus for effecting separation of a cellular component-free liquid filtrate from a liquid suspension of blood cellular components in continuous laminar flow under pressure through said apparatus by filtration through a microporous membrane which is permeable to blood proteins and impermeable to blood cellular components, comprising a housing means provided with a suspension inlet port and a suspension outlet port, said suspension inlet port leading into the inlet end of at least one continuous suspension flow channel which

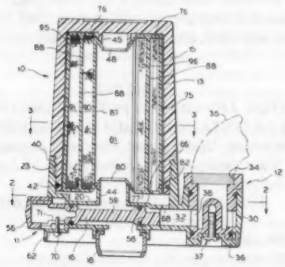
extends within said housing means and terminates at its outlet end in said suspension outlet port, each flow channel having one of its walls formed of a microporous filtration membrane disposed within said housing means, whereby said flow channel defines a filtration flow path along the surface of the upstream side of its membrane wall, said microporous filtration membrane being permeable to blood proteins and impermeable to blood cellular components, and said housing means being further provided with a filtrate exit port disposed on the downstream side of said membrane wall, the improvement consisting of each of said flow channels having a width across the surface of its membrane wall which gradually and uniformly increases along the length thereof from its inlet end to its outlet end, each said channel being constructed and arranged so that the membrane wall shear rate of the suspension flowing along said filtration flow path will gradually and uniformly vary along the length of said flow channel from a maximum value at said inlet end to a minimum value at said outlet end.



4,212,743
FILTER

Arch Van Meter, Hanover Park, and William J. Gartner, Streamwood, both of Ill., assignors to Universal Water Systems, Inc., West Chicago, Ill.

Filed Jan. 11, 1979, Ser. No. 2,590
Int. Cl.[2] B01D *27/00*
U.S. Cl. 210—282 **6 Claims**

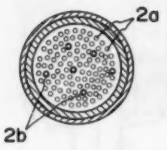


1. A filter cartridge comprising a generally cup-shaped housing having a generally cylindrical side wall, circular first and second end surfaces and fluid inlet and outlet openings, one of said openings being through and generally adjacent the edge of one of said end surfaces and the other of said openings being at the center of said one end surface, partition means within said housing extending between said end surfaces and defining a tortuous fluid flow path between said inlet and outlet openings and a quantity of filter material disposed in said flow path, said tortuous flow path including at least two nearly circular segments which extend in opposite directions around the axis of said housing whereby fluid flows through said flow path in planes which generally intersect the axis of said housing.

4,212,744
HAEMODIALYZER APPARATUS

Kazuhiro Oota, Nagoya, Japan, assignor to Asahi Medical Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,354
Claims priority, application Japan, Jun. 21, 1977, 52-73673
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—321 B **3 Claims**

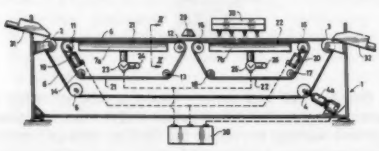


1. In a haemodialyzer comprising a housing having an inlet and an outlet for blood and an inlet and an outlet for dialyzate, a plurality of membranes positioned in said housing and fixation block means for holding said membranes at their end portions, in a liquid tight connection, in relation to said housing wherein separate liquid passages for said blood and said dialyzate are formed by said plurality of membranes that are separately communicated with said inlet and outlet for blood and with said inlet and outlet for dialyzate, the improvement wherein said membranes comprise a first plurality of semipermeable dialyzing membrane means substantially incapable of passing blood plasma proteins therethrough, said dialyzing membrane means contacting all components of said blood on one side thereof and contacting said dialyzate on the other side thereof, and a second plurality of filter membrane means for passing blood plasma proteins and for not passing blood corpuscles therethrough, wherein said dialyzing membrane means and said filter membrane means are held in said fixation block means.

4,212,745
BELT FILTER

Anne Jellesma, Sneek, Netherlands, assignor to Machinefabriek W. Hubert & Co. B.V., Sneek, Netherlands

Filed Sep. 8, 1978, Ser. No. 940,599
Claims priority, application Netherlands, Sep. 13, 1977, 7710048
Int. Cl.[2] B01D *33/04*
U.S. Cl. 210—401 **2 Claims**



1. A belt filter apparatus comprising:
(a) a filter belt mounted within the apparatus frame supported by at least one longitudinally driven conveyor belt,
(b) a suction casing with opposite upstanding longitudinal side walls and a spaced bottom pan which enclose the

conveyor belt further comprising a plurality of aligned interposed conveyor belts,

(c) supporting elements upstanding from the bottom of said casing; wherein said supporting elements in said suction casing have mutual distances closer than the mesh width of said conveyor belt bearing thereon, said mesh widths being larger than those of said filter belt,

(d) the distance between said supporting elements being greater than the mesh of said conveyor belt which is greater than the mesh of said filter belt,

(e) the upstanding side walls of said suction casing being the level of said conveyor belt which diverge outwardly into flared side edges which include a shallow angle with the transverse width of said filter belt and which sealingly support the edges of said filter belt which lie above and to both outer sides of said conveyor belt.

4,212,746

EDGE SEALING FOR FILTER CLOTHS

Edzard Tholema, Odenthal; Heinz-Gerd Nonnenbruch, Leverkusen; Hans Gossmann, Bergisch-Gladbach, and Peter Schultz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,302

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800453

Int. Cl.[2] B01D *29/04*

U.S. Cl. 210—495 **4 Claims**

1. In a filter cloth or filter felt having sealing means comprising a polychloroprene latex mixture disposed around the periphary thereof surrounding an unsealed portion for providing thereat means for preventing capillary action of the filter cloth or felt from the unsealed portion to the sealed portion thereby preventing the escape of fluids, the improvement wherein the polychoroprene latex mixture of the means for preventing capillary action contains from 2 to 40% by weight of zinc oxide and from 0 to 50% by weight of a silicate filler in addition to a polychloroprene with carboxyl groups.

4,212,747

SHEAR-THICKENING COMPOSITIONS

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 12, 1978, Ser. No. 868,965

Int. Cl.[2] E21B *43/26, 43/22*

U.S. Cl. 252—8.55 R **3 Claims**

1. An aqueous shear-thickening composition particularly applicable as a hydraulic fracturing fluid in well stimulation treatments, as a workover fluid in producing or injection wells, as a mobility control fluid in post-primary oil recovery operations, and as a diverting agent to substantially divert fluids during the injection of fluids in a well in communication with a subterranean reservoir containing as essential ingredients:

(a) a small but effective amount in the range of 0.1 to 3.0 weight percent of a high molecular weight polyalkylene oxide selected from the group consisting of polyethylene oxides, polypropylene oxides, and polybutylene oxides and having a molecular weight of about 10,000 to about 10,000,000 and

(b) a small but effective amount in the range of 0.025 to 2.5 weight percent of a synthetic resin comprising the reaction product formed by heating an aqueous alkaline mixture of an aldehyde having from one to four carbon atoms and a phenol compound selected from the group consisting of phenol, catechol, resorcinol, and cresol at a reaction temperature in the range of 100° to 212° F. for a period of time in the range of 5 minutes to 48 hours in a molar ratio of aldehyde to phenol in the range of 0.1:1 to 2:1, and a pH in the range of about 7 to 12, the amounts of (a) and (b) being sufficient to form a shear-thickening composition that is fluid in a quiescent state but becomes gel-like in character on agitation, and

(c) the balance of the composition being water.

4,212,748

POLYMER FLOOD FILTRATION IMPROVEMENT

Howard H. Ferrell; Dell Conley; Burton M. Casad, and Olaf M. Stokke, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 777,203, Mar. 14, 1977, abandoned. This application May 26, 1978, Ser. No. 910,158

Int. Cl.[2] E21B *43/22*

U.S. Cl. 252—8.55 D **6 Claims**

1. In a process for recovery of hydrocarbons from a subterranean formation wherein an aqueous fluid is injected into an injection well and hydrocarbons are produced from a production well; wherein at least a portion of the aqueous fluid is thickened with a heteropolysaccharide biopolymer produced by fermentation with Xanthomonas campestris; and wherein the aqueous mixture containing the biopolymer is filtered prior to injection of the biopolymer; the improvement comprising:

adding an amount of a hydrocarbon sulfonate surfactant or a sulfated alkoxylated alcohol surfactant sufficient to improve filterability of the aqueous mixture containing the biopolymer prior to filtration.

4,212,749

LIQUID PREPARATION OF FATTY ACID/ALKANOLAMINE CONDENSATES

Joachim Kolbe, Bergisch-Neukirchen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 592,899, Jul. 3, 1975, abandoned. This application May 31, 1977, Ser. No. 801,916

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1974, 2432296

Int. Cl.[2] D06M *13/18, 13/16*

U.S. Cl. 252—8.75 **4 Claims**

1. In a process for reducing the viscosity of an aqueous preparation of an anti-static agent or textile softener consisting essentially of a fatty acid/alkanolamine condensate containing cationic surface active agents consisting of amino-esters and ester-amides, the improvement comprising incorporating a sulfuric acid ester of the formula

$$R—X—OSO_3^{(-)}M^{(+)}$$

wherein

R is a saturated or unsaturated, straight-chain or branched, aliphatic radical with 8–22 C atoms, an alkylphenyl radical with 4–12 C atoms in the alkyl chain, or a naphthyl radical;

X is a polyglycol ether chain which is derived from ethylene oxide or propylene oxide or mixtures thereof, and wherein the number of chain members is 10–30; and

$M^{(+)}$ is a metal of main group 1 or an ammonium ion into the aqueous preparation of said anti-static agent or textile softener, in an amount of from 10–30% by weight of sulfuric acid ester based on the weight of fatty acid/alkanol amine condensate, to provide a mobile preparation miscible with water in all proportions.

4,212,750

METAL WORKING LUBRICANT

Jeremy W. Gorman, West Simsbury, Conn., assignor to Lubrication Technology, Inc., Weatogue, Conn.

Filed Dec. 15, 1977, Ser. No. 860,682

Int. Cl.[2] C10M *1/06, 3/38, 3/32*

U.S. Cl. 252—32.5 **22 Claims**

1. A water base metal working lubricant comprising about:

(a) 1 to 40 parts by weight of at least one water soluble polyalkylene glycol having a molecular weight of at least 200;

(b) 1 to 35 parts by weight of at least one water emulsifiable

high pressure lubricating ingredient selected from the class consisting of chlorinated paraffins, sulfurized esters of unsaturated fatty acids and chlorinated esters of unsaturated fatty acids;

(c) at least one non-cationic emulsifier present in at least the amount necessary to emulsify said high pressure lubricating ingredient in water; and

(d) sufficient water to comprise from about 10 percent to 96 percent by weight of said lubricant, said high pressure lubricating ingredient being emulsified in said lubricant.

4,212,751

DITHIOPHOSPHORIC ACIDS AND SALTS THEREOF AND OIL COMPOSITIONS CONTAINING THE SALTS

Hendrik Schadenberg; Corrie M. J. Leenaars, and Aaldert J. de Jong, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

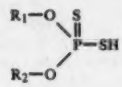
Filed Mar. 6, 1978, Ser. No. 883,761

Claims priority, application United Kingdom, Mar. 18, 1977, 11586/77

Int. Cl.[2] C10M *7/46*; C07F *9/177*

U.S. Cl. 252—32.7 E **8 Claims**

1. A compound of general formula:



wherein R_1 is a 1,5-dimethylbicyclo[3,2,1]oct-8-yl hydrocarbyl group bound to the oxygen by a ring carbon atom having two beta quarternary carbon atoms, and R_2 is R_1 or a different hydrocarbyl group which R_2 group may contain up to about 15 carbon atoms and may be substituted by chlorine, hydroxyl or ether groups, or a Group I or Group II metal salt thereof.

6. An oil composition comprising a major proportion of an oil of lubricating viscosity and from 0.01 to 10%w, based on the composition of a salt as in claim 1.

4,212,752

IMPROVED PROCESS FOR THE PRODUCTION OF AN ADDITIVE FOR LUBRICATING OILS AND RELATED PRODUCT

Andrea Peditto, Turin; Franco Fossati, Robassomero; Vincenzo Petrillo, Cirie'; Paolo Peri, Rivoli, all of Italy; Ielena A. Ivanova, Moscow, U.S.S.R.; Aleksandr I. Levin, Moscow, U.S.S.R.; Aleksandr A. Fufaiev, Moscow, U.S.S.R., and Viktor M. Shkolnikov, Moscow, U.S.S.R., assignors to Liquichimica Robassomero S.p.A., Milan, Italy and Vsesoiuznis Nauchij Issledovatelskij Institut Po Pererabotke Nefti Vniinp, Moscow, U.S.S.R.

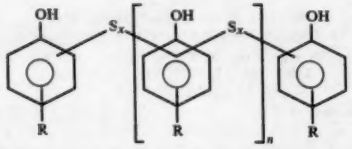
Continuation of Ser. No. 704,074, Jul. 9, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,664

Claims priority, application Italy, Jul. 14, 1975, 25386 A/75

Int. Cl.[2] C10M *1/54*

U.S. Cl. 252—42.7 **13 Claims**

1. In a process for the preparation of detergent additives for lubricating oils, of the type in which an alkylphenolsulfide having the formula:



wherein R represents a C_8–C_{12} alkyl radical, x has an average Value of between 1 and 2, and n is 0 or 1, is reacted with calcium metal oxide or hydroxide and carbonated with carbon dioxide, the reaction water being then distilled up to refluxing of the solvent, and the reaction product is filtered and then separated from the reaction solvent, the improvement comprising carrying out at least one of (1) the neutralization reaction between said alkylphenolsulfide and the calcium oxide or hydroxide and (2) the carbonating reaction by adding to the mixture 0.1–20% by weight, referred to the weight of the final product, of a promoter comprising a mono- or polyfunctional organic nitrogen derivative which is selected form the group consisting of primary and secondary alkylamines having 1 to 20 carbon atoms, polyalkyleneamines having 2 to 6 nitrogen atoms and the alkylene radical of which has 2 to 5 carbon atoms, aminoacids having 2 to 20 carbon atoms, aminoalcohols and polyalkanolamines having 2 to 12 carbon atoms and oleic acid amide of tetroethyleneysentamine, the reaction being effected in a hydrocarbon solvent containing 6 to 12 carbon atoms.

4,212,753

REACTION PRODUCTS OF SULFURIZED OLEFIN ADDUCTS OF PHOSPHORODITHIOIC ACIDS AND ORGANIC COMPOSITIONS CONTAINING SAME

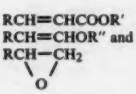
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,716

Int. Cl.[2] C10M *1/48*

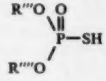
U.S. Cl. 252—46.6 **26 Claims**

1. A product made by reacting diene, acrylonitrile, an unsaturated aldehyde or a compound selected from the formulae



wherein R, R' and R" are hydrogen or hydrocarbyl groups or substituted hydrocarbyl groups containing 1 to 30 carbon atoms with the reaction product of

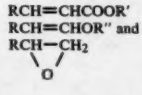
(1) a phosphorodithioic acid of the formulae



wherein R"' and R"" are hydrocarbyl groups containing 1 to 30 carbon atoms and

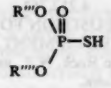
(2) a sulfurized olefin.

14. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or greases prepared therefrom and an antioxidant, an antiwear or a copper corrosion inhibiting amount of a product made by reacting diene, acrylonitrile, an unsaturated aldehyde or a compound selected from the formulae



wherein R, R' and R" are hydrogen or hydrocarbyl groups or substituted hydrocarbyl groups containing 1 to 30 carbon atoms with the reaction product of

(1).a phosphorodithioic acid of the formula



wherein R''' and R'''' are hydrocarbyl groups containing 1 to 30 carbon atoms and

(2) a sulfurized olefin.

4,212,754

CHELATE DETERGENT AND ANTIWEAR ADDITIVE FOR LUBRICANTS DERIVED FROM HYDROXYALKYLATED BENZOTRIAZOLES

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,079
Int. Cl.[2] C10M *1/10*
U.S. Cl. 252—49.7 **12 Claims**

1. Chelates prepared by (1) reacting in a 1:1 molar ratio a benzotriazole reactant with a monoepoxide at a temperature between about 25° C. and about 200° C. for between about one hour and about 24 hours to form a mixture of 1- and 2-hydroxyalkylbenzotriazoles, (2) esterifying said mixture or one of the isomers thereof with alkenylsuccinic anhydride at a temperature between about 40° C. and about 130° C. for between about 0.5 hours and about 8 hours to form a monoester, (3) converting said monoester to a salt of a metal selected from Groups IB, IIB, IVB, and VII of the Periodic Table, and (4) complexing said salt with a ligand containing amine, hydroxyl, oxazoline, or imidazoline groups to form a chelate.

2. A chelate of claim 1, wherein said benzotriazole reactant is benzotriazole, said monoepoxide is propylene oxide, said hydroxyalkylbenzotriazole is hydroxypropylbenzotriazole, said alkenylsuccinic anhydride is polybutenylsuccinic anhydride in which the polybutene has a molecular weight of about 500, said metal is zinc, and ligand is a polybutenylsuccinimide prepared from two moles 1300 molecular weight polybutenylsuccinic anhydride and one mole tetrathylenepentamine.

7. A composition comprising a major proportion of a lubricating oil or a hydrocarbon fuel and an amount sufficient to impart detergency properties thereto of a chelate of claim 1.

4,212,755

SETTLE RESISTANT LOOSE-FILL PERLITE INSULATION COMPRISING PARTICLES RENDERED SLIGHTLY TACKY BY A COATING THEREON

David L. Ruff, Torrance, and N. Gokul Nath, Carson, both of Calif., assignors to Grefco, Inc., Bala Cynwyd, Pa.

Filed Feb. 6, 1978, Ser. No. 875,632
Int. Cl.[2] C04B *43/00*
U.S. Cl. 252—62 **12 Claims**

1. Loose-fill thermal insulation comprising particles of expanded perlite rendered slightly tacky by a coating thereon.

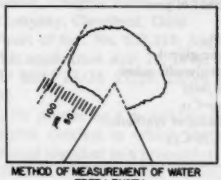
4,212,756

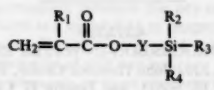
DIELECTRIC COMPOSITION STABILIZED AGAINST WATER TREEING WITH ORGANO SILANE COMPOUNDS

Arnold C. Ashcraft, Hightstown; Robert J. Turbett, Millington, both of N.J., and Timothy R. Burke, Houston, Tex., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 864,751, Dec. 27, 1977, abandoned. This application May 17, 1979, Ser. No. 40,060
Int. Cl.[2] H01B *3/44*
U.S. Cl. 252—63.2 **11 Claims**

1. A dielectric composition devoid of filler and resistant to water treeing comprising ethylene polymer, antioxidant for said polymer, and effective amounts, as a water treeing inhibitor, of at least one organo silane of the following formula:





wherein R_1 is hydrogen or C_1 to C_4 alkyl; Y is C_1 to C_8 alkylene or C_6 to C_{18} substituted or unsubstituted arylene; R_2 is C_1 to C_8 alkyl, C_1 to C_8 alkoxy, C_6 to C_{18} substituted or unsubstituted aryl, C_1 to C_8 acyloxy, C_6 to C_{18} substituted or unsubstituted aryloxy; R_3 and R_4 are independently selected from C_1 to C_8 alkoxy, C_1 to C_8 acyloxy or C_6 to C_{18} substituted or unsubstituted aryloxy.

4,212,757

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Gaylen R. Brubaker, Lawrenceville, and Fred R. Scholer, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 22, 1978, Ser. No. 972,644
Int. Cl.[2] C11D *7/54, 3/395*
U.S. Cl. 252—95 **12 Claims**

7. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator, an organophosphorus chlorine compound selected from the class consisting of $R_1OR_2P(O)Cl$, $R_1R_2OP(O)Cl$ and $R_1R_2P(O)Cl$, wherein R_1 and R_2 are selected from the group consisting of an aliphatic radical of 1 to 18 carbon atoms, an aromatic hydrocarbon radical of 6 to 10 carbon atoms while taken together R_1 and R_2 can be an open chain alkylene bridge of 1 to 10 carbon atoms or a closed alkylene chain connected to oxygen atoms in each of the formulas to form a 5 to 6 membered ring.

4,212,758

CLEANSING AGENTS CONTAINING OLEIC ACID, ISOPROPANOL AND ETHYLACETATE

Valentina G. Shashkina, ulitsa Michurina, 23/25, kv. 92, Riga; Gunta Y. Neimane, ulitsa Padomju, 8, kv. 1, Rizhsky raion, Inchukalns; Petr I. Belkevich, ulitsa Kulman, 15, kv. 55, Minsk; Fanya L. Kaganovich, ulitsa Kozlova, 8/1, kv. 88, Minsk; Elena F. Dolidovich, ulitsa D. Serdicha, 3, kv. 58, Minsk; Ljudmila S. Sheremet, ulitsa Slavinskogo, 17, kv. 223, Minsk, and Viktor J. Yachnik, Pukhovichsky raion, poselok Svilosch, Minskaya oblast, all of U.S.S.R.

Filed Oct. 20, 1978, Ser. No. 953,070
Int. Cl.[2] C11D *3/60*
U.S. Cl. 252—119 **4 Claims**

1. A cleansing agent comprising oleic acid, isopropyl alcohol, triethanolamine, ethanol extract of peat wax resin obtained by the ethanol extraction of peat wax resin at a temperature of the alcohol boiling point, ethyl acetate, 1,2-propylene glycol, polyethyleneglycolic ether of synthetic fatty acids C_{10}–C_{18}, diethanolamides of synthetic fatty acids C_{10}–C_{13}, and water, the components being taken in the following quantities, in percent by weight:

oleic acid	10.0–13.0
isopropyl alcohol	19.0–21.0
triethanolamine	3.0–5.0
ethanol extract of peat wax resin	1.0–1.5
ethyl acetate	10.0–13.0
1,2-propylene glycol	4.0–5.7
polyethyleneglycolic ether of synthetic fatty alcohols C_{10}–C_{18}	4.0–5.5
diethanolamides of synthetic fatty acids C_{10}–C_{13}	5.0–6.5
water	to 100.

4,212,759

ACIDIC HYDROCARBON-IN-WATER EMULSIONS

David W. Young, 2302 John Hancock Center, 875 N. Michigan Ave., Chicago, Ill. 60611, and Donald G. Cherry, c/o Elco Chemicals, Inc., 2454 Palmer Ave., Park Forest, South, Ill. 60466

Continuation of Ser. No. 895,626, Apr. 12, 1978, abandoned, which is a continuation of Ser. No. 781,478, Mar. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,639, Aug. 28, 1975, abandoned. This application Jan. 22, 1979, Ser. No. 5,607

Int. Cl.[2] C11D *7/20, 7/08*

U.S. Cl. 252—119 18 Claims

1. An acidic cleaning composition in the form of a stable hydrocarbon-in-water emulsion for cleaning surfaces comprising about 3 to 20 weight percent liquid hydrocarbon having a boiling range of about 130° C. to 350° C., about 15 to 35 weight percent porous silica absorbent, said absorbent having a surface area of at least about 100 square meters per gram and a particle size in the range of about 10 to 200 microns in diameter; about 0.5 to 7 weight percent moderately strong acid; about 0.5 to 10 weight percent aliphatic monocarboxylic acid having about 10 to 24 carbon atoms; about 0.5 to 5 of secondary or tertiary lower alkanol amine; and water; said composition having a pH of about 1 to 3.

7. An acidic, acid-stable, hydrocarbon-in-water emulsion comprising an emulsion-providing combination consisting essentially of a liquid hydrocarbon, water in an amount to provide a weight ratio of water to liquid hydrocarbon greater than about 2:1, a minor amount of a porous absorbent silica sufficient to stabilize the emulsion, and a minor amount of a moderateiy strong acid sufficient to provide a pH of about 0.5 to 3.5.

4,212,760

SOLUBILIZED ALKALINE, AQUEOUS SOLUTIONS OF NONIONIC SURFACTANTS

Richard Baur, Mannheim; Knut Oppenlaender, and Dieter Stoeckigt, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,101

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754359

Int. Cl.[2] C11D *1/66, 3/20*

U.S. Cl. 252—156 5 Claims

1. A process for the preparation of a strongly alkaline, aqueous solution of a nonionic surfactant by mixing the surfactant, aqueous sodium hydroxide solution and a solubilizer and if necessary diluting with water, wherein the solubilizer is a mixture of a monocarboxylic acid of 6 to 11 carbon atoms and from 0.05 to 1 part by weight per part by weight of monocarboxylic acid of an ene-adduct of maleic anhydride with an unsaturated fatty acid of 12 to 24 carbon atoms or a triglyceride thereof, the weight ratio solubilizer:surfactant being from 1:1 to 10:1.

4,212,761

METHOD AND COMPOSITION FOR CLEANING DAIRY EQUIPMENT

Leonard L. Ciaccio, Glen Rock, N.J., assignor to Novo Laboratories, Inc., Wilton, Conn.

Filed Mar. 6, 1978, Ser. No. 883,404

Int. Cl.[2] C11D *7/42, 3/386*

U.S. Cl. 252—174.12 5 Claims

3. A cleaning solution adapted for cleaning dairy equipment of milk derived deposits which consists essentially of water, a non-ionic or anionic detergent, from 0.5–2.5 grams per liter of sodium carbonate and sodium bicarbonate in a weight ratio of 1:5 to 3:1, from 0.01–1 gram per liter of an alkaline proteinase based upon an enzymatic activity of 1.5 Anson Units per gram or 4.0 KNP Units/gm whichever measurement is appropriate to the enzyme, and from zero to 1.25 grams per liter of sodium tripolyphospate, said cleaning composition having a pH of pH 8.5–11.

4,212,762

LIQUID CRYSTAL MATERIALS HAVING A FORMULA CONTAINING A DIPHENYLETHANE NUCLEUS

Jean-Claude Dubois; Huu Tinh Nguyen, and Annie Zann, all of Paris, France, assignors to Thomson-CSF, Paris, France

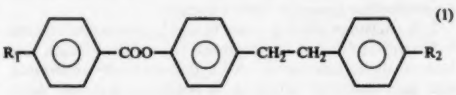
Filed Nov. 21, 1978, Ser. No. 962,692

Claims priority, application France, Nov. 24, 1977, 77 35357

Int. Cl.[2] C07C *69/76, 121/60;* C09K *3/34*

U.S. Cl. 252—299 7 Claims

1. Liquid crystal materials comprising at least one compound of the formula:



wherein R_1 represents an alkyl or alkoxy group having n carbon atoms (n being an integer from 1 to 10), and R_2 represents an alkyl group having m carbon atoms (m being an integer from 1 to 10), or bromine or the cyanine group.

4,212,763

BIS-TRIAZINYLAMINOSTILBENE COMPOUNDS AND THEIR USE AS FLUORESCENT BRIGHTENING AGENTS

Werner Fringeli, Laufen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

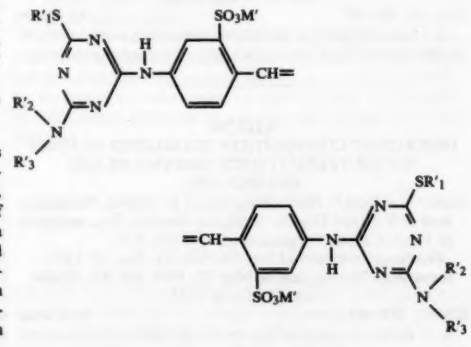
Filed Jun. 26, 1978, Ser. No. 919,115

Claims priority, application Switzerland, Jul. 4, 1977, 8180/77

Int. Cl.[2] C07D *403/06, 401/14*

U.S. Cl. 252—301.23 21 Claims

1. A bis-triazinylaminostilbene compound, of the formula



in which R_1' is alkyl having 1 to 6 carbon atoms, R_2' is hydrogen, alkyl having 1 to 6 carbon atoms, cyclohexyl, benzyl, alkyl having 1 to 4 carbon atoms which is substituted by hydroxyl, sulpho or cyano, alkoxyalkyl having a total of 2 to 6 carbon atoms or mono- or di-alkylaminoalkyl each having 1 to 4 carbon atoms per alkyl moiety and R_3' is hydrogen, alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms which is substituted by hydroxyl or cyano, or alkoxyalkyl having a total of 3 to 6 carbon atoms, or R_2' and R_3' together with the nitrogen atom to which they are bonded are a pyrrolidine, piperidine, hexamethyleneimine, piperazine, N-methylpiperazine or morpholine ring, and M' is hydrogen or an alkali metal ion, and, if R_2' or R_3' is hydroxyalkyl, R_1' is methyl only.

4,212,764

QUATERNARY POLYVINYL HETEROCYCLIC COMPOSITIONS AND USE AS CORROSION INHIBITORS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 3, 1972, Ser. No. 268,549
Int. Cl.² C23F 11/14, 11/12
U.S. Cl. 252—392 **13 Claims**

1. A process of inhibiting corrosion in a system which comprises treating said system with a mixture comprising a quaternary polymer of vinyl pyridine, vinyl pyrazine, vinyl piperidine, vinyl quinoline, derivatives or copolymers thereof and an oxyalkylated surfactant of the formula

$$Z[(OA)_nOH]_m$$

where Z is the oxyalkylatable moiety of an oxyalkylatable compound $Z(OH)_m$, A is the alkylene moiety of an alkylene oxide, and n is a number from 1 to 2,000.

4,212,765

PROCESS FOR THE MANUFACTURE OF A CATALYST

Klemens Gutweiler, Niedernhausen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,509
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802763
Int. Cl.² C08F 4/02, 4/22, 4/78
U.S. Cl. 252—430 **32 Claims**

1. A process for the production of a catalyst, which comprises reacting, in the absence of water and at a temperature of from 0° to 40° C., a chromate ester of the formula

$$(RO)_2CrO_2,$$

wherein R is tertiary alkyl or aralkyl of from 4 to 24 carbon atoms, with an anhydrous carrier selected from the group consisting of oxides of silicon, oxides of aluminum and mixtures thereof; treating the reaction product, in the absence of an unsaturated polymerizable hydrocarbon and at a temperature of from 0° to 40° C., with a first aluminum-organic compound selected from the group consisting of aluminum trialkyls, aluminum dialkyl hydrides, aluminum dialkyl alkoxides, reaction products of aluminum trialkyls with dienes, reaction products of aluminum dialkyl hydrides with dienes, and polyalkyl-aluminum oxides, in a proportion of Cr to Al of 1:1 to 1:50, and mixing said treated reaction product with a second aluminum-organic compound.

4,212,766

PROCESS FOR FORMING MULTI-COMPONENT OXIDE COMPLEX CATALYSTS

James F. Brazdil, Lyndhurst; Dev D. Suresh, Macedonia, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 823,319, Aug. 10, 1977, Pat. No. 4,148,757. This application Apr. 21, 1978, Ser. No. 898,356
Int. Cl.² B01J 23/16, 23/28, 23/30, 23/72
U.S. Cl. 252—432 **11 Claims**

1. In a process for producing a molybdate or tungstate activated oxide complex catalyst in which the elements of the catalyst are combined together in a precatalyst aqueous slurry, the slurry so obtained is dried to form a precatalyst precipitate, and the precatalyst precipitate is then calcined to form said catalyst, the improvement wherein: the key catalytic phase of said catalyst defined as a molybdate or tungstate of Bi, Te, Sb, Sn, Cu or mixtures thereof is preformed prior to combining with the other elements of said catalyst,

provided that when one or more elements in said catalyst is supplied to said precatalyst aqueous slurry in the form of

(a) a source salt having a heat-decomposable cation or anion,

(b) an inorganic salt reaction product of said source salt, or

(c) an aqueous slurry of either (a) or (b)

then the elements of said catalyst are combined in such a way that said precatalyst preciptate contains a substantial amount of at least one of said heat-decomposable anions or cations, said catalyst having a composition defined by the formula:

$$[M_mN_nO_x]_q[A_aC_bD_cE_dF_eN_fO_y]_p$$

wherein

M=Bi, Te, Sb, Sn and/or Cu
N=Mo and/or W
A=alkali, Tl, and/or Sm
C=Ni, Co, Mn, Mg, Be, Ca, Sr, Ba, Zn, Cd and/or Hg
D=Fe, Cr, Ce and/or V
E=P, As, B, Sb
F=rare earth, Ti, Zr, Nb, Ta, Re, Ru, Rh, Ag, Au, Al, Ga, In, Si, Ge, Pb, Th, and/or U, and further

wherein

a=0–4
b=0–20
c=0.01–20
d=0–4
e=0–8
f=8–16
m=0.01–10
n=0.1–30
a+b+c+d+e>0, and
x and y are numbers such that the valence requirements of the other elements for oxygen in the key catalytic phase and the host-catalytic phase, respectively, are satisfied; and the ratio of q/p is 0.1 to 10.

4,212,767

METHOD OF PREPARING AN OXIDATION CATALYST CONTAINING A MOLYBDATE ANION

Chelliah Daniel, Boothwyn, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 17, 1978, Ser. No. 952,177
Int. Cl.² B01J 27/14, 27/24, 27/02, 27/06
U.S. Cl. 252—435 **17 Claims**

1. A method of preparing a catalyst comprising:

(a) combining a molybdic acid or non-metallic molybdate salt with a water-soluble, acid or non-metallic salt of an element selected from the group consisting of silicon, phosphorus, arsenic and mixtures thereof in an aqueous solution,

(b) adding an aqueous chloride ion and a compound selected from the group consisting of phosphotungstate, silicotung-

state, vanadium arsenate, silicoarsenate, phosphovanadate, silicovanadate, corresponding acids thereof and mixtures thereof,

(c) drying the resulting combination, and

(d) calcining the dried material to yield a catalyst having the empirical formula:

$$Y_wMo_xA_yO_z$$

where Y is phosphorous, arsenic, silicon or mixtures thereof,

A is tungsten, vanadium, arsenic when Y is not arsenic, or mixtures thereof,

w ranges from 0.5 to 1.5,

x ranges from 10 to 15,

y ranges from 0.1 to 2.0, and

z ranges from 1 to 42 and is an integer necessary to satisfy the valency requirements of the formula.

4,212,768

ELECTROLESS PLATING OF NONCONDUCTIVE SUBSTRATES

Melvin N. Jameson, Rte. 1, St. Marys, W. Va. 26170, and Gerald A. Krulik, Rte. 1, Box 212, Washington, W. Va. 26181

Filed May 5, 1975, Ser. No. 574,498

Int. Cl.[2] B01J *27/06*; C09D *5/00*; C23C *3/00*

U.S. Cl. 252—441 **28 Claims**

1. A concentrated, catalytically active composition, suitable for initiating electroless deposition of metal, the active constituent thereof consisting essentially of the reaction product of: (1) a molten tin salt; (2) a palladium salt; and (3) an effective amount of a metal halide selected from the group consisting of chloride and bromide compatible with said tin and palladium salts, the cation of component (3) selected from the group consisting of alkali metals, alkaline earth metals, rare earth metals and transition metals, said reaction product being substantially free from an extrinsic source of acid and wherein the molar ratio of tin to palladium is at least 2:1.

4,212,769

ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 910,301, May 26, 1978, Pat. No. 4,159,939, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Feb. 21, 1979, Ser. No. 13,490

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.[2] B01J *27/08, 27/10*

U.S. Cl. 252—441 **20 Claims**

1. A catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state, and of a tantalum component.

4,212,770

ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 924,112, Jul. 12, 1978, Pat. No. 4,179,359, which is a continuation-in-part of Ser. No. 739,887, Nov. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,041, Nov. 14, 1975, Pat. No. 4,009,123, which is a division of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,960,710. This application Mar. 22, 1979, Ser. No. 22,911

The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.

Int. Cl.[2] B01J *27/08, 27/10*

U.S. Cl. 252—441 **11 Claims**

1. An acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % iridium, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % Group IVA metal, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum or palladium, iridium, Group IVA metallic and catalytically available cobalt components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum or palladium and iridium components are present in the elemental metallic state; wherein substantially all of the Group IVA metallic component is present in an oxidation state above that of the corresponding metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

4,212,771

METHOD OF PREPARING AN ALUMINA CATALYST SUPPORT AND CATALYST COMPRISING THE SUPPORT

Glen P. Hamner, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 8, 1978, Ser. No. 931,330

Int. Cl.[2] B01J *29/06, 29/04, 23/08*

U.S. Cl. 252—455 Z **36 Claims**

1. A process for the preparation of a catalyst support which comprises the steps of:

(a) grinding a calcined alumina to a powder having a diameter ranging from about 10 to about 400 mesh Tyler, and

(b) extracting the ground alumina with an extractant comprising an acid selected from the group consisting of inorganic acids and organic acids, for a time sufficient to remove at least 1 weight percent of said alumina from said ground alumina.

15. A process for the preparation of a catalyst which comprises the steps of:

compositing at least one catalytic component selected from the group consisting of (i) a crystalline aluminosilicate zeolite, (ii) a metal component selected from the group consisting of a metal or a compound of a metal from the group of IB, IIA, IIIB, IVA, IVB, VB, VIB, VIIB, VIII, rare earth metals and mixtures thereof, with an alumina support prepared by the steps which comprise: (a) grinding a calcined alumina to a powder, and (b) extracting the ground alumina with an extractant comprising an acid selected from the group consisting of inorganic acids and organic acids, for a time sufficient to remove at least one weight percent of said alumina from said ground alumina.

4,212,772

CATALYST FOR THE MANUFACTURE OF ETHYLENE OXIDE

Wolf D. Mross; Eckart Titzenthaler, both of Ludwigshafen; Matthias Schwarzmann, Limburgerhof, and Juergen Koopmann, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 796,062, May 12, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,039

Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622228; Sep. 9, 1976, 2640540; Sep. 11, 1976, 2641000; Feb. 2, 1977, 2704197

Int. Cl.[2] B01J *23/04, 23/50*

U.S. Cl. 252—476 **7 Claims**

1. A catalyst for the manufacture of ethylene oxide by reacting ethylene with oxygen, said catalyst comprising silver and alkali metal compounds on a carrier, in which catalyst are contained, based on the silver present, from 0.1 to 2 atom% of

lithium and either from 0.05 to 0.35 atom% of potassium or from 0.003 to 0.25 atom% of rubidium or from 0.0005 to 0.2 atom% of cesium or a mixture of two or more of potassium, rubidium and cesium in amounts exhibiting corresponding catalytic activity.

4,212,773

PERFUMERY COMPOSITIONS WITH TRIMETHYL-TETRAHYDROPYRAN-2-ONES

Ulf-Armin Schaper, Düsseldorf, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,651

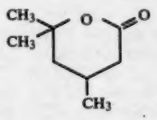
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818244

Int. Cl.² C11B 9/00; A61K 7/46

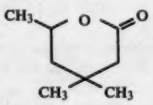
U.S. Cl. 252—522 R **6 Claims**

1. A perfumery composition consisting essentially of from 1% to 50% by weight of a trimethyl-tetrahydropyran-2-one selected from the group consisting of

(1) 4,6,6-trimethyl-tetrahydropyran-2-one of the formula



(2) 4,4,6-trimethyl-tetrahydropyran-2-one of the formula



and

(3) mixtures of (1) and (2),

and the remainder customary constituents of perfumery compositions.

4,212,774

RECOVERY OF HIGH-QUALITY POLYCARBONATE FROM POLYCARBONATE SCRAP

Karsten Idel, c/o Bayer AG, Krefeld-Uerdingen, Fed. Rep. of Germany (D 4150)

Continuation of Ser. No. 930,612, Aug. 3, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,840

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737693

Int. Cl.² C08J 11/04

U.S. Cl. 260—2.3 **7 Claims**

1. A process for the recovery of aromatic, high molecular weight, thermoplastic polycarbonates from polycarbonate scrap, in which the polycarbonate scrap is saponified in bulk or in solution at temperatures between about 25° C. and 220° C. to form a saponification mixture, the non-saponified constituents are separated off, and the resulting saponification mixture is then phosgenated and subjected to polycondensation by a two phase boundary polycondensation method, without any further purification steps and treatment steps.

4,212,775

PROCESS FOR THE PURIFICATION OF WASTE LIQUORS IN THE PRODUCTION OF PHENOL-FORMALDEHYDE RESINS

Margarita D. Babina, ulitsa Vostochnaya, 40, kv. 18, Sverdlovsk; Egor F. Vlaskin, Ruzheiny pereulok, 4, kv. 57, Moscow; Evgeny S. Dunjushkin, ulitsa Vyazovskaya, 9, kv. 77, Nizhny Tagil, Sverdlovskoi oblasti; Anna P. Gabets; Ida I. Pereskokova, both of ulitsa Vostochnaya, 40, kv. 18, Sverdlovsk; Galina I. Popova, Bankovsky pereulok, 3, kv. 4, Sverdlovsk; Valentina A. Glumova, ulitsa Sovetskaya, 51, kv. 134, Sverdlovsk; Ljudmila A. Naumova, ulitsa Gagarina, 49/1, kv. 3, Sverdlovsk, and Galina G. Poprygo, ulitsa Moskovskaya, 76a, kv. 3, Sverdlovsk, all of U.S.S.R.

Filed Oct. 13, 1977, Ser. No. 841,984

Int. Cl.² C08L 1/02

U.S. Cl. 260—17.2 **11 Claims**

1. A process for the purification of waste liquors in the production of phenol-formaldehyde resins, comprising:

(a) isolating phenol and partially formaldehyde from waste liquors, in which the molar ratio of phenol and formaldehyde is from 1:1.4 to 1:3.5 by sorption and polycondensation in the presence of a vegetable sorbent, in an amount such that the phenol and formaldehyde are sorbed thereon and after reaction of the phenol and formaldehyde with each other and with components of said sorbent a useful product is formed, at a pH of from 0.65 to 0.8 at the boiling point for a time period sufficient for bonding phenol and to form a useful product as a result of the reaction of phenol and formaldehyde with components of said sorbent, and subsequently separating said product from the liquid phase;

(b) removing methanol from the liquid phase and

(c) isolating residual formaldehyde from the resulting liquid phase from which methanol has been removed, by sorption and polycondensation in the presence of a vegetable sorbent at 60°–100° C. wherein a condensation component is added which is selected from the group consisting of phenol and urea in an amount sufficient to bond formaldehyde and to form a useful product as a result of the reaction of the condensation component, formaldehyde and components of the vegetable sorbent and wherein the sorption and polycondensation are carried out at a pH of 0.65–0.8 when said condensation component is phenol and at a pH of 8–10 when said condensation component is urea and separating the resultant product.

4,212,776

SELF CROSSLINKING WATER DISPERSIBLE EPOXY ESTER-ACRYLATE POLYMERS

Carlos J. Martinez, Edison, and Michael A. Tobias, Bridgewater, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,920

Int. Cl.² C09D 3/58, 3/76

U.S. Cl. 260—18 EP **12 Claims**

1. A copolymer which is water-dispersible comprising the copolymerization product of

(A) a polyglycidyl ether of a bisphenol, which polyglycidyl ether is partially esterified with an ethylenically unsaturated fatty acid or a saturated fatty acid; and

(B) a mixture of monoethylenically unsaturated monomers including methacrylic acid and N-alkoxymethacrylamide or N-alkoxymethylmethacrylamide.

4,212,777

LINEAR, FLEXIBLE, HIGH TENSILE STRENGTH COPOLYAMIDES

Jean Goletto, Ecully, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Oct. 26, 1978, Ser. No. 954,753
Claims priority, application France, Oct. 28, 1977, 77 33341
Int. Cl.[2] C08G *69/14*
U.S. Cl. 260—18 N 32 Claims

1. A polymerizable composition of matter comprising (1) caprolactam, (ii) a dimeric fatty acid, and (iii) hexamethylenediamine, said dimeric fatty acid (ii) having an iodine number less than 30, containing less than about 0.5% by weight of its monobasic fatty acid precursor, and not more than 5% by weight of such acid having a basicity of greater than 2, the said dimeric fatty acid (ii) and the hexamethylenediamine (iii) being present in the composition as a solvent solution of the stoichiometrically balanced salt thereof, and said composition comprising from 40 to 95% by weight caprolactam and from 5 to 60% by weight of the stoichiometrically balanced salt.

4,212,778

PERICLASE REFRACTORY AND ITS METHOD OF MANUFACTURE

Wate T. Bakker, Anne Arundel County, Md., assignor to General Refractories Company, Bala Cynwyd, Pa.

Division of Ser. No. 431,558, Jan. 7, 1974, Pat. No. 3,943,216.
This application Sep. 17, 1975, Ser. No. 613,990
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—22 A 20 Claims

1. Unfired periclase refractory brick having a green strength of above 30 p.s.i. made from a dry brick batch containing 2.5 to 4.5% of an alkyd resin and 0.1 to 1.5% of an organic or inorganic acid, both based on the weight of the dry batch, the acid giving the brick a green strength of above 30 p.s.i.

11. An improved binder system for the production of periclase refractories, the binder system consisting essentially of an alkyd resin and from about 5 to about 35% by weight of the weight of the alkyd resin of an organic or inorganic acid which gives green brick having a transverse strength in excess of 30 p.s.i., said acid selected from the group consisting of toluene sulfonic acid, xylene sulfonic acid, mixtures thereof, salicylic acid, trichloroacetic acid, sulfonic acid and hydrochloric acid.

4,212,779

CATHODICALLY DEPOSITABLE BINDERS

Gerhard Schmölzer, and Heiner Verdino, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Vienna, Austria

Filed Feb. 17, 1978, Ser. No. 878,772
Claims priority, application Austria, Feb. 18, 1977, 1087/77
Int. Cl.[2] C09D *3/58, 3/66, 5/02, 5/40*
U.S. Cl. 260—22 CQ 11 Claims

1. Cathodically depositable water dilutable coating compositions comprising a basic binder system comprising a blend or partial reaction product of a basic macromolecular component carrying basic nitrogen groups and an acidic macromolecular component having unreacted carboxyl groups, the ratio of basic groups to acid groups as expressed by the amine number and acid number ranging between 97:3 and 65:35.

4,212,780

POLYCHLOROPRENE NON-PHASING SOLVENT CEMENTS

Kenneth D. Fitzgerald, Sugarland, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Filed Apr. 24, 1978, Ser. No. 899,080
Int. Cl.[2] C08L *93/04, 9/00;* C08K *5/01*
U.S. Cl. 260—27 BB 20 Claims

1. A non-phasing chloroprene polymer adhesive composition comprising:

(a) 100 parts by weight of a chloroprene polymer,

(b) from 4 to 6 parts by weight, based on dry chloroprene polymer, of rosin selected from the group consisting of unmodified rosin, hydrogenated rosin, dehydrogenated rosin, and mixtures thereof, provided said rosin contains less than 2.16 parts by weight of dehydroabietic acid based on dry chloroprene polymer,

(c) 1 to 50 parts by weight of basic metal oxide, and

(d) 5 to 100 parts by weight of modified phenolic resin, said (a), (b), (c) and (d) being admixed with an organic solvent so as to obtain a solids content of said adhesive composition of from 5 to 60% by weight.

8. A process for preparing non-phasing chloroprene polymer adhesive composition comprising:

polymerizing chloroprene in an aqueous emulsion in an emulsifying system containing rosin in the range of 3 to 5 parts by weight per hundred parts of polymerizable monomer, said rosin selected from the group consisting of unmodified rosin, hydrogenated rosin, and dehydrogenated rosin to produce a polymer of chloroprene containing from 4 to 6 parts by weight of said rosin and less than 2.16 parts by weight dehydroabietic acid, based on dry polymer; separating said polymer; and mixing said polymer with basic metal oxide, phenolic resin and solvent in amounts to produce an adhesive composition.

4,212,781

MODIFIED EPOXY RESINS, PROCESSES FOR MAKING AND USING SAME AND SUBSTRATES COATED THEREWITH

James M. Evans, Panama City, Fla., and Vincent W. Ting, Brunswick, Ohio, assignors to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 685,246, May 11, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,611
Int. Cl.[2] C08L *61/28, 63/00*
U.S. Cl. 260—29.4 UA 75 Claims

1. An associatively-formed resinous blend that is dispersible in a basic aqueous vehicle, and that has an oxirane content of no more than 3%, comprising:

(a) carboxylic acid-functional graft polymer,

(b) ungrafted carboxylic acid-functional addition polymer, and

(c) ungrafted aliphatic or aromatic 1,2-epoxy diepoxide resin;

said graft polymer being a 1,2-epoxy diepoxide resin component onto which is grafted an addition polymer component, said graft polymer and said ungrafted addition polymer containing carboxylic acids units furnishing carboxyl groups that contribute at least 5% of the weight of said blend, said graft polymer being formed by the reaction of a 1,2-epoxy diepoxide resin and ethylenically unsaturated monomer in the presence of at least 3% of benzoyl peroxide by weight based on monomer, or under equivalent free radical initiating conditions for the reaction including the use of a peroxide initiator, at a temperature in the range from about 80° C. to 200° C.,

the grafting between said addition polymer component and said epoxy resin component being at aliphatic backbone carbon atoms of said epoxy resin component, to the extent of at least 1½ weight parts of said addition polymer component per 100 weight parts of said epoxy resin equivalent in the blend, the epoxy resin component of said graft polymer having an initial molecular weight of from about 350 to about 20,000 and with said ungrafted epoxy resin constituting from about 5 to 90% of said blend by weight,

the acid-functionality of the reaction product composition being sufficiently high to establish the blend as a dispersion in an aqueous medium containing a base that ionizes the acid-functional polymers.

4,212,782

POLYMERS OF ACID ADDITION SALTS OF METHACRYLIC ACID AND A 2-MONO(LOWER)ALKYLAMINOETHYL METHACRYLATE

Max Klein, Tinton Falls, N.J., assignor to Normac, Inc., Tinton Falls, N.J.

Continuation of Ser. No. 674,990, Apr. 8, 1976, which is a continuation-in-part of Ser. No. 413,043, Nov. 5, 1973, Pat. No. 3,950,398, which is a continuation-in-part of Ser. No. 15,935, Mar. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 488,756, Sep. 20, 1965, abandoned. This application May 8, 1978, Ser. No. 903,566

Int. Cl.[2] C08F *4/04;* C08K *5/19;* C08F *2/28, 18/22*

U.S. Cl. 260—29.6 HN 26 Claims

1. A solid, readily water-soluble, free radical addition polymer of a water-soluble acid addition salt of methacrylic acid and a 2-mono(lower)alkylaminoethyl methacrylate whose lower alkyl group has up to 6 carbons and is straight or branched chain or cyclic, wherein the methacrylic acid and the mono-alkylaminoethyl methacrylate moieties are (i) linked to one another by addition at the respectively original vinyl group of each of them and (ii) present in the ratio of from about 1 mol to about 1.5 mols of one of them per mol of the other, which polymer (a) is insoluble in pentane at below its boiling point, and (b) in aqueous media manifests amphoteric activity.

4,212,783

PAPER SIZES

Hisatake Sato; Shiroh Saitoh, both of Yokohama; Michihiro Mohri, Kawasaki; Akio Miyahara, Tokyo, and Hideo Hayashi, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,486

Claims priority, application Japan, Aug. 3, 1977, 52-92508

Int. Cl.[2] C08F *8/12, 8/46*

U.S. Cl. 260—29.6 H 8 Claims

1. A paper size obtained by the steps of:

treating with an acid a C_5 distillate contained in a fraction boiling within the range of 20°–80° C. and containing at least one C_5 acyclic conjugated diolefin in an amount of 10–35 wt.% of the distillate, the fraction being obtained as a by-product by thermocracking, a steam cracking or catalytically cracking petroleum, to obtain a hydrocarbon distillate boiling within the range of 170°–400° C. and having a freezing point of not higher than −20° C.,

reacting 100 parts by weight of the thus obtained hydrocarbon distillate with 25–80 parts by weight of maleic anhydride to obtain a reaction product and then

saponifying the thus obtained reaction product with an alkali thereby to obtain the size.

4,212,784

POLYMERIZATION OF WATER SOLUBLE POLYMERS IN WATER-IN-OIL LATEX FORM TO PRODUCE EMULSIONS CONTAINING HIGH POLYMER SOLIDS LEVELS AND LOW OIL LEVELS

Kenneth G. Phillips, River Forest, and Mary E. Bingham, Palos Hills, both of Ill., assignors to Nalco Chemical Co., Oak Brook, Ill.

Filed May 4, 1979, Ser. No. 36,117

Int. Cl.[2] C08L *33/02*

U.S. Cl. 260—29.6 WQ 2 Claims

1. A method of producing a water-in-oil emulsion of ammonium polyacrylate which comprises polymerizing a water-in-oil emulsion of ammonium acrylate in the presence of a water-in oil emulsifier, and a free radical polymerization catalyst with the amount of oil initially present in said emulsion being at least 15% by weight, continuing said polymerization until substantially all of the ammonium acrylate has polymerized to form ammonium polyacrylate, allowing a major portion of the oil in the oil phase of the emulsion to separate as an upper layer, thus leaving as a lower layer a water-in-oil emulsion of ammonium polyacrylate, which emulsion contains less than 10% by weight of oil.

4,212,785

PROCESS FOR THE PREPARATION OF COPOLYMERS USEFUL AS VISCOSITY-RAISING AGENTS

Ulrich Türck, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huls A.G., Marl, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,884

Int. Cl.[2] C08L *33/02*

U.S. Cl. 260—29.7 H 4 Claims

1. In a process for the preparation of a viscosity-raising copolymer, which comprises copolymerizing at an elevated temperature (a) methacrylic acid, (b) a conjugated diolefin, and (c) an ester of an α,β-ethylenically unsaturated dicarboxylic acid, the improvement wherein (a) 50–60% by weight of methacrylic acid, (b) 15–49% by weight of a conjugated diolefin, and (c) 1–25% by weight of fumaric acid dialkyl ester, maleic acid dialkyl ester or a mixture thereof, wherein each alkyl is of 1–8 carbon atoms, are copolymerized in an aqueous emulsion having a phase ratio of monomer mixture:water of 1:1.7 to 1:2.5, wherein, based on the monomer content, the aqueous phase contains 0.02–1% by weight of an alkaline compound, 0.05–1% by weight of an initiator, 0.01–1% by weight of a molecular weight regulator and 0.1–5% by weight of an emulsifier.

4,212,786

CRAYON COMPOSITIONS

Kimio Murakami, Osaka, Japan, assignor to Sakura Color Products Corporation, Japan

Filed Dec. 8, 1978, Ser. No. 967,855

Claims priority, application Japan, Dec. 12, 1977, 52-149759

Int. Cl.[2] C07D *13/00;* C08K *5/09, 5/05*

U.S. Cl. 260—31.2 R 21 Claims

1. A drawing crayon composition comprising, per 100 parts by weight of the composition,

(a) 10 to 30 parts by weight of at least one member selected from the group consisting of an ester of cellulose, ether or cellulose, polyvinyl butyral, polyvinyl acetate and ethylenevinyl acetate copolymer,

(b) 5 to 30 parts by weight of at least one member selected from the group consisting of a condensation product of cyclohexanone and formaldehyde, a condensation product of meta-xylene and formaldehyde, a condensation product of meta-xylene and formaldehyde which product is modified with an alkyl phenol having C_{1-6} alkyl, an amide resins prepared by the condensation polymerization of dimer acide and di- or poly-amine, a synthetic terpene resin prepared from turpentine oil, a synthetic terpene resin prepared from an unsaturated hydrocarbon and a terpene-phenol copolymer,

(c) 2 to 12 parts by weight of at least one dibenzylidene sorbitol, tribenzylidene sorbitol and derivatives of the sorbitols,

(d) 25 to 60 parts by weight of at least one of glycols, ethers of glycols, ether esters of glycols and benzoic acid esters, and

(e) 20 to 30 parts by weight of a pigment or 2 to 10 parts by weight of an oil-soluble dye.

4,212,787

THERMOPLASTIC ELASTOMER COMPOSITION, BLENDS OF THE COMPOSITION WITH OLEFIN PLASTIC, AND FOAMED PRODUCTS OF THE COMPOSITION AND THE BLENDS

Akira Matsuda; Shizuo Shimizu, and Shunji Abe, all of Ichihara,, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed May 26, 1978, Ser. No. 910,086

Claims priority, application Japan, May 26, 1977, 52-60399; Jun. 1, 1977, 52-63353; Jun. 2, 1977, 52-63937; Jul. 8, 1977, 52-81026; Feb. 24, 1978, 53-19912; Mar. 14, 1978, 53-28201

Int. Cl.[2] C08L *23/16*

U.S. Cl. 260—33.6 AQ 20 Claims

1. A thermoplastic composition which comprises:

100 to 5 parts by weight of (A) a partially cured elastomer composition obtained by dynamic heat-treatment, in the presence of an organic peroxide, of a mixture of 100 to 40 parts by weight of (a) peroxide-curable olefin copolymer rubber selected from the group consisting of ethylene-propylene copolymer rubber and ethylene-propylene-non conjugated diene terpolymer rubber,

0 to 60 parts by weight of (b) a peroxide-decomposing olefin plastic selected from the group consisting of isotactic polypropylene and propylene- alpha olefin copolymer.

wherein the sum of the component (a) and the component (b) is 100 parts by weight, and

5 to 100 parts by weight of (c) at least one member of peroxide-non curable hydrocarbon rubbery material selected from the group consisting of polyisobutylene and butyl rubber, and (d) mineral oil softener; and

0 to 95 parts by weight of (B) an olefin plastic selected from the group consisting of hompolymers of an alpha olefin selected from the group consisting of ethylene, propylene, 1-butene, 1-pentene, 3-methyl-1-butene, 1-hexene, 3-methyl-1-pentene, 4-methyl-1-pentene and 1-octene; copolymers therebetween; and copolymers thereof with 15 mole % or less of another copolymerizable monomer;

wherein the sum of the component (b) and the component B account for not less than 5 parts by weight among 100 parts by weight of the final composition.

4,212,788

PROCESS FOR PRODUCING POLYMALEIC ANHYDRIDE

Raymond N. Birrell, Brooklands, and Norman E. Royle, Urmston, both of England, assignors to Ciba-Geigy (UK) Limited, London, England

Continuation of Ser. No. 813,772, Jul. 7, 1977, abandoned. This application Nov. 16, 1978, Ser. No. 962,566

Claims priority, application United Kingdom, Jul. 22, 1976, 30523/76

Int. Cl.[2] C08F *122/06;* C08K *5/01*

U.S. Cl. 260—33.6 UA 7 Claims

1. In the process for the manufacture of polymaleic anhydride which comprises polymerizing maleic anhydride in a xylene solvent the ortho isomer content of which is up to 99% utilizing di-tertiary butyl peroxide as polymerization catalyst, the improvement according to which a portion of the xylene solvent is replaced by an amount of monochlorobenzene such that the ratio of monochlorobenzene to xylene solvent is from 1:1 to 10:1 by weight.

6. The process of claim 1 wherein the resulting product is hydrolysed using water, an acid or an alkali.

4,212,789

PROCESS FOR PREPARING HIGH IMPACT POLYSTYRENES

Harry D. Anspon, Sewickley Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1978, Ser. No. 935,410

Int. Cl.[2] C08K *5/01*

U.S. Cl. 260—33.6 AQ 5 Claims

1. Method of making a high impact polystyrene composition useful in making extruded sheet having characteristics suited for deep draw thermoforming comprising

(a) thermally polymerizing while stirring, a polymerization mass comprising styrene, from about 4% to about 8% polybutadiene rubber dissolved therein and having a 1,2 vinyl content of from about 11% to about 22% and a cis content of at least 25%, and about 0.1 ppm to about 10 ppm, based on the weight of the rubber, of a quinone or quinone-imine free-radical terminator, at temperatures from about 235° F. to about 250° F., until about 30% conversion of monomer,

(b) shearing the mass with agitation or stirring to form a rubber particle size in the range of about 1 to about 10 microns,

(c) converting the mass to a suspension by the addition of water under agitation,

(d) adding to said suspension about ½% to about 2% of a high boiling plasticizer,

(e) further polymerizing the suspension by the addition of an effective amount of free-radical catalyst and maintaining the temperature between about 235° F. to about 270° F., and

(f) recovering the high impact polystyrene thus formed from the suspension.

4,212,790

RESIN CONCRETE COMPOSITION

Jyoji Ibata; Yukio Fujita, and Naoya Kominami, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,754

Claims priority, application Japan, Nov. 11, 1977, 52-134682

Int. Cl.[2] C08K *3/36*

U.S. Cl. 260—40 R 9 Claims

1. A resin concrete composition comprising an allyl ether-modified unsaturated polyester, at least one ethylenically unsaturated monomer and an aggregate, 20 mole percent or more of the total dicarboxylic acid units in said allyl ether-modified unsaturated polyester being unsaturated dicarboxylic acid units, the ratio of the number of allyl groups/the number of molecules of unsaturated dicarboxylic acid in said unsaturated polyester being 1/10 to 4/1, and said unsaturated polyester having a number average molecular weight of 800 to 7000.

4,212,791

POLY(ALKYLENETEREPHTHALATE) MOLDING COMPOSITIONS CONTAINING OLIGOMERIC POLYESTER AND SEGMENTED COPOLYESTER-POLYETHER ELASTOMER

Noyes L. Avery, and William J. Work, both of Oreland, Pa., assignors to Rohm and Haas, Philadelphia, Pa.

Filed Feb. 23, 1979, Ser. No. 14,405

Int. Cl.[2] C08L *67/02, 67/08, 69/00*

U.S. Cl. 260—40 R 19 Claims

1. Composition comprising poly(alkylene terephthalate) and an inert, particulate nucleating agent, an oligomeric polyester, and a segmented polyester-polyether block copolymer as crystallization promoters.

4,212,792
COUPLED GLASS IN RUBBER MODIFIED THERMOPLASTICS
John I. Davies, Littleborough, England, assignor to TBA Industrial Products Limited, Manchester, England
Filed Jun. 27, 1978, Ser. No. 919,565
Claims priority, application United Kingdom, May 17, 1977, 28260/77
Int. Cl.² C08K 7/14
U.S. Cl. 260—42.18 20 Claims

1. A thermoplastic moulding material comprising, in percent by weight of the molding material,
a styrene acrylonitrile copolymer,
from about 1 to about 30% of an elastomeric material having an elongation at break greater than the styrene acrylonitrile copolymer, from about 0.5 to about 5% of a polyimide pre-polymer that is the reaction product of a polyamine and a bis-imide of an unsaturated carboxylic acid and being capable of reacting further to give a thermoset resin, and
from at least 15% up to not more than 50% of a reinforcing filler selected from the group consisting of glass fibers and mica.

4,212,793
MOLD CORROSION INHIBITION
Robert S. Shue, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 21, 1978, Ser. No. 972,084
Int. Cl.² C08K 5/09, 3/32, 3/38
U.S. Cl. 260—45.85 T 13 Claims

1. A composition of matter comprising poly(arylene sulfide) resin having incorporated therein a corrosion inhibiting amount of a corrosion inhibiting agent consisting essentially of at least one metal salt selected from the group consisting of calcium hypophosphite, sodium tetraborate, trisodium citrate, trisodium phosphate, and tetrasodium pyrophosphate.

4,212,794
AQUEOUS DRILLING FLUID
Karl-Heinz Grodde, Celle, and Alfred Schulz, Hornbostel, both of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany
Division of Ser. No. 745,017, Nov. 26, 1976, Pat. No. 4,083,790, which is a continuation-in-part of Ser. No. 642,932, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 363,229, May 23, 1973, abandoned. This application Nov. 21, 1977, Ser. No. 853,057
Claims priority, application Fed. Rep. of Germany, May 23, 1972, 2224959
The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.
Int. Cl.² C09F 1/02; C09K 7/02
U.S. Cl. 260—97.6 2 Claims

1. An aqueous drilling fluid lubricating additive consisting of a fractionally distilled tall oil fraction lubricating additive having a fatty acids and fatty oils content of from about 10 to about 25% by weight, a rosin acids content of from about 50% to about 80% by weight, the balance being unsaponifiables and neutrals, said lubricating additive having an initial boiling point in the range of from about 110° to 130° C. at 1.5 mm. Hg., and a final boiling point in the range of from about 185° to 195° C. at 0.5 mm. Hg., the neutralization number thereof being in the range of from about 90 to about 107 and the saponification number being in the range of from about 102 to about 135, and wherein the difference between the neutralization number and the saponification number of said lubricating additive is below 30, said lubricating additive being nonfoaming in an aqueous drilling fluid at a pH up to about 9.

4,212,795
CYCLIZATION OF PEPTIDES
John L. Hughes, Kankakee; Jay K. Seyler, Bourbonnais, and Robert C. Liu, Kankakee, all of Ill., assignors to Armour Pharmaceutical Company, Kankakee, Ill.
Filed Nov. 13, 1978, Ser. No. 960,229
Int. Cl.² C07C 103/52
U.S. Cl. 260—112.5 T 19 Claims

1. In a process for preparing a peptide having a disulfide ring structure, the step of holding a peptide having in its amino acid chain two cysteine residues, one of which has an n-alkylthio group attached thereto, and the other of which has attached thereto an n-alkylthio group or, if said other residue is at the amino terminal position, a cysteine group, in a solution substantially free of oxygen until rearrangement has taken place, to yield a cyclic disulfide peptide.

4,212,796
PROCESS FOR THE PREPARATION OF CYSTEINE-CONTAINING PEPTIDES
Wolfgang König, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jan. 10, 1979, Ser. No. 2,347
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801175
Int. Cl.² C07C 103/52; C07G 7/00
U.S. Cl. 260—112.5 R 3 Claims

1. A method for detaching the S-trityl group from an S-trityl compound of a peptide containing cysteine protected with an S-trityl group, which method comprises treating said S-trityl compound with a mixture of a mercaptan and trifluoroacetic acid.

4,212,797
SYNTHETIC PENTAPEPTIDE HAVING OPIATE AGONIST ACTIVITY
Brenton G. A. Hanlon, Palo Alto; Jaw-Kang Chang, San Jose, and Bosco T. W. Fong, Sunnyvale, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Feb. 2, 1976, Ser. No. 654,641
Int. Cl.² C07C 103/52; A61K 37/00
U.S. Cl. 260—112.5 R 1 Claim

1. A synthetic pentapeptide with opiate agonist activity having the formula H-Tyr-Gly-Gly-Phe-Met-NH_2.

4,212,798
PROCESS OF PRODUCING SOYBEAN AND/OR SOY PROTEIN PRODUCTS
Osahiro Satou, Kawasaki; Makoto Yamaguchi, and Mikio Hasegawa, both of Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan
Filed May 10, 1979, Ser. No. 37,821
Claims priority, application Japan, May 11, 1978, 53/55980
Int. Cl.² A23J 1/14
U.S. Cl. 260—123.5 10 Claims

1. A process of producing soybean and/or soy protein products, which comprises the steps of:
(a) contacting a soy protein-containing material with an ethanol-water mixture;
(b) separating the liquid fraction from the suspension of step (a);
(c) dividing the liquid fraction into first and second portions;
(d) diluting the first portion with water to an ethanol concentration of less than 40%;
(e) subjecting the diluted portion to extractive distillation in a tower at a temperature in the range of 80° C. to 95° C.;
(f) removing volatile materials from said diluted portion and recovering distillation bottoms from said extractive distillation;
(g) subjecting the distillation bottoms to azeotropic distillation and recovering the distilled portion thereof; and

(h) combining said distilled portion with said second portion of step (c) as the feed material for step (a).

4,212,799

METHOD FOR PREPARING A PROTEINIC ISOLATE FROM SUNFLOWERSEED MEAL USING ALUMINUM SALTS

Carlo Nuzzolo, Rome; Rodolfo Vignola, Monterotondo, and Antonio Groggia, Rome, all of Italy, assignors to Snam Progetti, S.p.A., Milan, Italy

Filed May 22, 1979, Ser. No. 41,411
Claims priority, application Italy, Jun. 2, 1978, 24136 A/78
Int. Cl.[2] A23J 1/14
U.S. Cl. 260—123.5 **7 Claims**

1. A method for the preparation of proteinic isolates from vegetable meals which contain undesirable compounds, comprising the steps of directly extracting the proteins with alkaline aqueous solutions while concurrently complexing such undesirable compounds with an Al salt, and subsequently precipitating the proteins by acidification to the isoelectric point in the presence of a compound capable of maintaining aluminum in solution, redissolving the proteins and precipitating them again still in the presence of the compound capable of maintaining aluminum in solution.

4,212,800

INHIBITION OF LANTHIONINE FORMATION DURING ALKALINE TREATMENT OF KERATINOUS FIBERS

Mendel Friedman, Moraga, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,976
Int. Cl.[2] A23J 1/10; C07G 7/00
U.S. Cl. 260—123.7 **5 Claims**

1. In the process of treating keratinous fibers containing lysine with alkali, the improvement which comprises reacting the fibers prior to alkaline treatment with an acylating moiety containing from one to eight carbon atoms to inhibit the formation of lanthionine during the alkaline treatment.

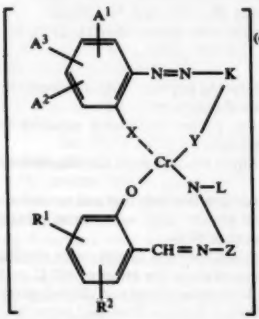
4,212,801

UNSYMMETRICAL 1:2-CHROMIUM COMPLEXES CONTAINING AN AZO AND AN AZOMETHINE BOND

Hans Baumann, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 23, 1977, Ser. No. 780,669
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1976, 2614201
Int. Cl.[2] C09B 45/06, 45/16, 45/26; D06P 1/10
U.S. Cl. 260—145 A **5 Claims**

1. A dye of the formula



in which

A^1 is hydrogen, hydroxysulfonyl, chloro, bromo, methyl, methoxy, ethoxy, nitro, methylsulfonyl, ethylsulfonyl, sulfamoyl, sulfamoyl having one or two C_1 to C_4 alkyl substituents on nitrogen, or N-phenylsulfamoyl;

A^2 is hydrogen, chloro, nitro or hydroxysulfonyl;

A^3 is hydrogen;

A^1 and A^3 together form a fused benzene ring optionally bearing nitro as a substituent;

R^1 is hydrogen, chloro, bromo, nitro, hydroxysulfonyl, phenylazo, phenylazo substituted by chloro, bromo, methyl, methoxy, ethoxy, nitro or hydroxysulfonyl or naphthylazo substituted by hydroxysulfonyl;

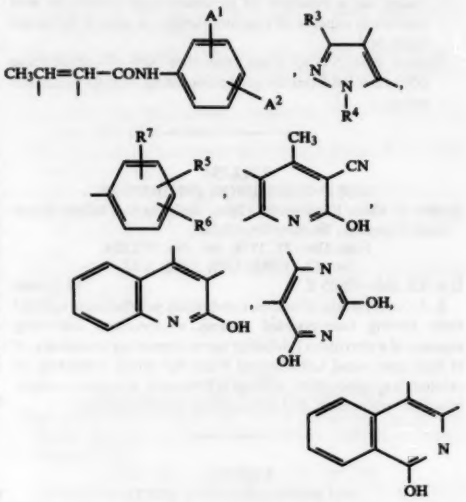
R^2 is hydrogen, chloro, bromo or nitro;

R^1 and R^2 together form a fused benzene ring;

X is —O— or —COO—;

Y is —O— or —NH—;

K is



R^3 is hydrogen, methyl, phenyl or carbamoyl;

R^4 is hydrogen, phenyl or phenyl substituted by methyl, chloro or hydroxysulfonyl;

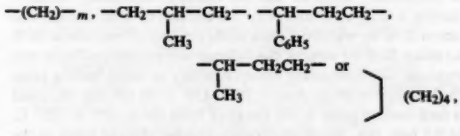
R^5 is methyl, methoxy, acetylamino, propionylamino, benzoylamino, N-phenylamino, dimethylamino or diethylamino;

R^6 is hydrogen or methyl;

R^7 is hydrogen or

R^5 and R^6 together represent a fused benzene ring or a fused benzene ring substituted by bromo, amino, hydroxy, phenylamino, acetylamino, propionylamino, benzoylamino or hydroxysulfonyl, and R^7 is hydroxysulfonyl;

Z is



L is C_1 to C_6 alkyl, C_2 or C_3 hydroxyalkyl, β-cyanoethyl, C_1 to C_4 alkoxyethyl, C_1 to C_4 alkoxypropyl, phenoxyethyl, phenoxypropyl, C_2 to C_4 alkanoylethyl, C_2 to C_4 alkanoylpropyl, benzoyloxyethyl, benzoyloxypropyl, phenylsulfonyloxyethyl, phenylsulfonyloxypropyl, tolylsulfonyloxyethyl, tolylsulfonyloxypropyl, cyclohexyl, benzyl, phen-

ylethyl, phenyl or phenyl bearing chloro, bromo, methyl, ethyl, methoxy, ethoxy or hydroxysulfonyl as a substituent;

m is one of the integers 1, 2 and 3; and

n is the total number of the sulfonic acid groups and of the carboxyl groups which do not participate in the formation of the complex, with the proviso that the number of said sulfonic acid groups is not greater than 2.

4,212,802

1:2 CHROMIUM COMPLEXES OF DISAZO COMPOUNDS

Claude Vogel, St.-Louis, France, and Heinz Wicki, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

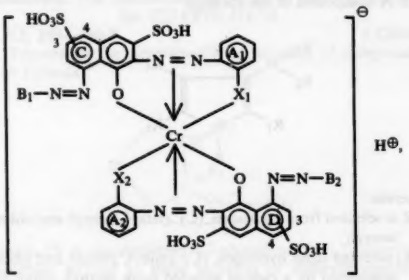
Filed Aug. 1, 1978, Ser. No. 930,085

Claims priority, application Switzerland, Aug. 5, 1977, 9634/77; Feb. 21, 1978, 1843/78

Int. Cl.² C09B 45/26

U.S. Cl. 260—145 A **21 Claims**

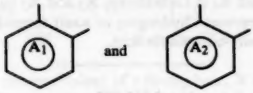
1. A complex of the formula



or a salt thereof,

or a mixture of such complexes in free acid or salt form, wherein

each of



is independently the radical of a diazo component of the benzene series, with the proviso that rings A_1 and A_2 are free from acid groups bound directly thereto and free from fiber-reactive groups,

each of B_1 and B_2 is independently 8-hydroxyquinolyl or substituted phenyl having (i) one or two substituents each of which is independently hydroxy, $—NH_2$, anilino or $(C_{1-4}alkyl)$phenylamino, with the proviso that not more than one substituent is selected from anilino and $(C_{1-4}alkyl)$phenylamino, and (ii) a maximum of one substituent selected from the group consisting of C_{1-4}alkyl, C_{1-4}alkoxy and halo,

each of X_1 and X_2 is independently —O— or —COO—, and each of the sulfo groups on rings C and D is independently in the 3- or 4-position,

wherein each halo is independently fluoro, chloro, bromo or iodo.

4,212,803

CATIONIC AZO DYESTUFFS CONTAINING OXYALKYLENE SUBSTITUENT

Winfried Kruckenberg, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,647

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2631030

Int. Cl.² C09B 29/08, 29/26, 29/34, 29/36

U.S. Cl. 260—154 **10 Claims**

1. Cationic dyestuff of the formula

$$[(D—N{=}N—K)(—R)_n]^{m\oplus}{}_{mo}An^{\ominus}$$

wherein

D is a phenyl, thiazolyl, benzthiazolyl, benzisothiazolyl, thiadiazolyl, pyrazolyl, indazolyl, imidazolyl, benzimidazolyl, triazolyl, benztriazolyl, pyridinyl, pyrazolopyridinyl, quinolinyl, or benzoxazolyl radical;

K is a phenyl naphthyl, indolyl, aminopyrazolyl, dihydroindolyl, pyrazolyl, pyrazolonyl, indazolyl, imidazolyl; benzimidazolyl, benztriazolyl, benzisothiazolyl, benzthiazolyl, tetrahydroquinolinyl, or malonodintrilo radical; or the radical of a coupling component selected from the group consisting of acetoacetate, cyanoacetate, cyanoacetic acidamide and acetoacetic acid amide;

m and n independently of one another are 1 or 2;

$An^{\ominus}$ is an anion;

R is

$$—A—O—(B_1—O)_p—E;$$

$$—A—O—CO—F—O—(B_1—O)_p—E_1; \text{ or}$$

$$—A—(O—F)_{p1}—CO—O—(B_1—O)_p—E;$$

A is C_2–C_4-alkylene unsubstituted or substituted with halogen, hydroxyl, C_1–C_4-alkoxy, or C_1–C_4-alkoxycarbonyl; or a direct bond;

B_1 is C_2–C_4-alkylene; or C_2–C_4-alkylene substituted by halogen, C_1–C_4-alkoxy, hydroxyl, or C_1–C_4-alkoxycarbonyl;

E is C_1–C_6-alkyl; C_2–C_6-alkenyl; C_1–C_6-alkyl substituted by cyano, halogen or C_1–C_4-alkoxy; cyclohexyl; cyclopentyl; cyclohexyl or cyclopentyl substituted by methyl; formyl; (C_1–C_6-alkyl)-carbonyl; (C_2–C_6-alkenyl)-carbonyl; (C_1–C_6-alkyl)carbonyl substituted in the alkyl group by cyano, halogen, or C_1–C_4-alkoxy; hydrogen; phenylcarbonyl; phenyl-(C_1–C_6-alkyl)-carbonyl; phenyloxy-(C_1–C_6-alkyl)-carbonyl; phenyl-(C_1–C_6-alkyl)-phenyl; or phenylcarbonyl, phenyl-(C_1–C_6-alkyl)-carbonyl, phenyloxy-(C_1–C_6-alkyl)-carbonyl, phenyl-(C_1–C_6-alkyl), or phenyl substituted in the phenyl by 1 or 2 members selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen; wherein the alkenyl groups are straight-chain or branched;

F is C_1–C_6-alkylene;

p is 1 to 3; and

p_1 is 0 or 1;

and wherein at least one of the radicals A or B_1 is substituted.

4,212,804

PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED 2,3-INDOLINEDIONES

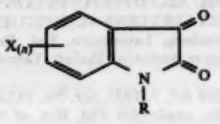
Gary M. Coppola, Budd Lake, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Dec. 4, 1978, Ser. No. 966,200

Int. Cl.² C07D 209/38, 209/36

U.S. Cl. 260—325 R **9 Claims**

1. A process for the preparation of a 2,3-indolinedione of the formula:



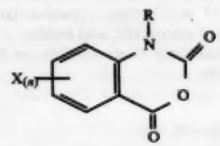
wherein

R is hydrogen; C_{1-4} alkyl; C_{3-6} alkenyl; C_{3-6} alkynyl; unsubstituted phenyl; phenyl substituted by one or two substituents independently selected from C_{1-4} alkyl, C_{1-4} alkoxy, fluoro, chloro and bromo; unsubstituted benzyl; or benzyl substituted on the benzene ring by one or two substituents independently selected from C_{1-4} alkyl, C_{1-4} alkoxy, fluoro, chloro and bromo;

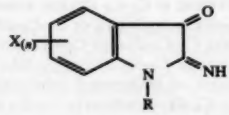
X is fluoro; chloro; bromo; C_{1-4} alkyl; C_{1-4} alkoxy; or nitro; or two adjacent X's together may also form methylenedioxy; and

n is 0 or an integer 1 or 2, the two X's being the same or different when n is 2,

which comprises reacting a 3,1-benzoxazine of the formula,



wherein R, X and n are as defined above, with an alkali or alkaline earth metal cyanide or a tetra-(C_{1-4}) alkylammonium cyanide in a molar ratio of cyanide compound to benzoxozine compound of about at least 1:1, to decarboxylate said 3,1-benzoxazine and obtain a 2-imino-3-indolinone of the formula,



wherein R, X and n are as defined above, said 2-imino-3-indolinone then being subjected to hydrolysis to obtain said 2,3-indolinedione.

4,212,805

BIS-PHTHALIMIDES

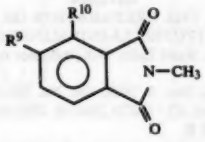
Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,621, Jul. 24, 1978. This application Apr. 30, 1979, Ser. No. 34,249

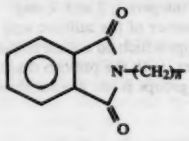
Int. Cl.[2] C07D *209/48, 237/30*

U.S. Cl. 260—326 N **6 Claims**

1. The compound of the formula:



wherein one of R^9 and R^{10} is hydrogen and the other is —$NR^{11}R^{12}$; R^{11} is hydrogen or straight chain alkyl having 1–4 carbon atoms and R^{12} is



wherein n=2–8.

4,212,806

AMINOPYRROLE DERIVATIVES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

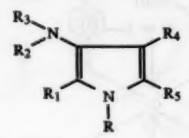
Division of Ser. No. 750,759, Dec. 15, 1976, Pat. No. 4,140,696, which is a continuation-in-part of Ser. No. 716,749, Aug. 23, 1976, abandoned, and a continuation-in-part of Ser. No. 492,564, Jul. 29, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,387

Claims priority, application United Kingdom, Aug. 22, 1976, 39790/73

Int. Cl.[2] C07D *207/44, 207/50*

U.S. Cl. 260—326.2 **8 Claims**

1. A compound of the formula



I

wherein:

R is selected from hydrogen, (C_{1-4})alkyl, benzyl and chlorobenzyl;

R_1 selected from hydrogen, (C_{1-4})alkyl, phenyl and phenyl substituted by a radical selected from methyl, ethyl, methoxy, ethoxy, benzyloxy, fluoro, chloro and bromo;

R_2 and R_3 individually represent hydrogen, (C_{1-4})alkyl or, taken together, represent an isopropylidene radical;

R_4 is carbo(C_{1-3})alkoxy; benzoyl,

R_5 represents hydrogen, (C_{1-4})alkyl or trifluoromethyl; with the proviso that, when R is hydrogen, R_1 and R_5 are methyl and R_4 is carbethoxy, R_2 and R_3 cannot simultaneously represent hydrogen; or a salt thereof with a pharmaceutically-acceptable acid.

4,212,807

PROCESS FOR DEACYLATING N-ACYL-6-SUBSTITUTED-2-[2-AMINOETHYLTHIO]-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACIDS

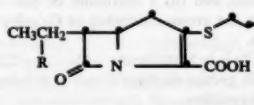
Ronald W. Ratcliffe, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 10, 1978, Ser. No. 932,738

Int. Cl.[2] C07D *487/04*

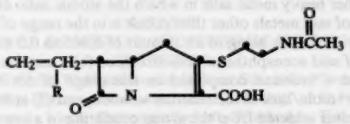
U.S. Cl. 260—326.31 **1 Claim**

1. A process for preparing



wherein R is hydrogen or hydroxyl, which comprises chlorinating, in the presence of base with a chlorinating agent se-

lected from PCl_5, $SOCl_2$, or $POCl_3$ at a temperature of from −50° to 65° C., the silylated compound



in which the 3-carboxyl group and the hydroxyl group, when R is hydroxyl, are blocked by previous reaction with dimethyldichlorosilane, trimethyl chlorosilane, or hexamethyldisilazane; followed by treating the resulting imino chloride intermediate with an excess of alcohol to yield the corresponding imino ether;

followed by hydrolyzing in aqueous solution at a pH of 3 to 5 at a temperature of from 0°-25° C.; and recovering the desired product thereby produced.

4,212,808

2-OXIRANYL-1,4-BENZODIOXANS

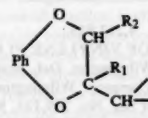
Heinz W. Gschwend, New Providence, and Charles F. Huebner, Chatham, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 940,423, Sep. 7, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 18,958

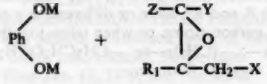
Int. Cl.² C07D *319/08*

U.S. Cl. 260—340.3 **9 Claims**

1. Process for the stereospecific preparation of compounds of the formula



wherein Ph is unsubstituted 1,2-phenylene or 1,2-phenylene substituted by one to three identical or different members selected from lower alkyl, lower alkoxy, lower alkylenedioxy, benzyloxy, halogeno, trifluoromethyl or nitro, and each of R_1 and R_2 is hydrogen or lower alkyl, which comprises condensing compounds of the formulae



wherein M is one equivalent of a strong base, X is a reactively esterified hydroxy group and one of Y and Z is R_2 and the other is CH_2X.

4,212,809

PROCESS FOR THE PREPARATION OF 5-(OXIRANYLMETHYL)-1,3-BENZODIOXOLE

Gebhard Rauleder, Duesseldorf; Helmut Waldmann, Leverkusen; Volker Mues, Wuppertal, and Hermann Seifert, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,448

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757926

Int. Cl.² C07D *317/44*

U.S. Cl. 260—340.5 R **13 Claims**

1. Process for the preparation of 5-(oxiranylmethyl)-1, 3-benzodioxole from 5-(2-propenyl)-1,3-benzodioxole and percarboxylic acids, which comprises reacting 5-(2-propylene)-1, 3-benzodioxole with a solution of a per-alkane carboxylic acid with up to 5 carbon atoms whereby the per-alkane carboxylic contains low amounts of water of up to 5% by weight, less than 2% by weight of hydrogen peroxide and less than 50 ppm of mineral acid, in an inert organic solvent, using a molar ratio of 5-(2-propenyl)-1,3-benzodioxole to percarboxylic acid of 1.2 to 20:1 and at a temperature of −20 to +80° C.

4,212,810

NOVEL TRIMETHYLTETRAORGANOTIN COMPOUNDS

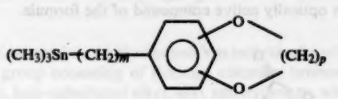
Melvin H. Gitlitz, Edison; John E. Engelhart, Westfield, and David A. Russo, Edison, all of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Division of Ser. No. 845,354, Oct. 25, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,940

Int. Cl.² A01N *9/28*; C07D *317/50*

U.S. Cl. 260—340.5 R **2 Claims**

1. A novel tetraorganotin compound of the formula



wherein said —O—CH_2)$_p$O— group is bonded to adjacent carbon atoms of the phenyl ring, m is 0 or 1 and p is 1 or 2.

4,212,811

BICYCLIC LACTONE INTERMEDIATES

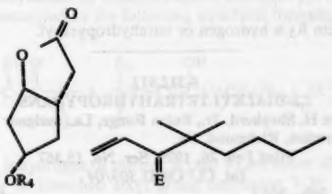
Barney J. Magerlein, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 353,477, Apr. 23, 1973, abandoned, which is a division of Ser. No. 133,842, Apr. 12, 1971, abandoned. This application Mar. 6, 1975, Ser. No. 555,780

Int. Cl.² C07D *307/93*

U.S. Cl. 260—343.3 P **15 Claims**

1. An optically active compound of the formula



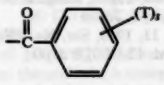
or a racemic compound of that formula and the mirror image thereof,

wherein E is O═,

or

and

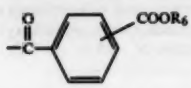
wherein R_4 is



(I)

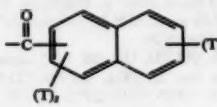
wherein T is alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, and s is zero to 5, inclusive, provided that not more than two T's are other

than alkyl, and that the total number of carbon atoms in the T's does not exceed 10 carbon atoms;



(2)

wherein R_6 is alkyl of one to 4 carbon atoms, inclusive;

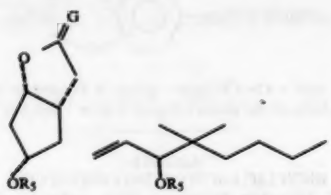


(3)

wherein T and s are as defined above; or

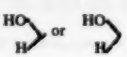
(4) acetyl.

6. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof,

wherein G is O=



and

wherein R_5 is hydrogen or tetrahydropyranyl.

4,212,812

2,2-DIALKYLTETRAHYDROPYRANS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 26, 1979, Ser. No. 15,367

Int. Cl.[2] C07D *309/04*

U.S. Cl. 260—345.1 **9 Claims**

1. A process of producing 2,2-dialkyltetrahydropyrans which comprises contacting a methyl substituted primary or secondary alkenol with a strong acid so that cyclization occurs, said alkenol being characterized by having an olefinic bond in the sixth position relative to the carbon atom carrying the hydroxyl group and at least one methyl group in the fifth position relative to said carbon atom.

4,212,813

PROCESS FOR PRODUCING SUBSTITUTED OR UNSUBSTITUTED NAPHTHALIC ACIDS AND ACID ANHYDRIDES THEREOF

Ryoichi Hasegawa, Yono, Japan, assignor to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,407

Int. Cl.[2] C07B *3/00*

U.S. Cl. 260—346.4 **12 Claims**

1. A process for producing naphthalic acid or anhydride thereof, which comprises oxidizing an acenaphthene selected from the group consisting of 5,6-dichloroacenaphthene, 5-chloroacenaphthene, 5-bromoacenaphthene and sodiumacenaphthene-5-sulfonate with molecular oxygen in an organic solvent at a temperature of 30° to 150° C. in the presence of (1) a catalyst which is either (a) a mixture of cobalt salts and other heavy metal salts in which the atomic ratio of cobalt to one of said metals other than cobalt is in the range of 1:0.001 to 2, said mixture being in an amount of 0.005 to 0.3 mole per mole of said acenaphthene derivatives, or (b) a mixture of said (a), and a bromine compound in the range of 5×10^{-5} to 2×10^{-1} mole/liter of the reaction solution; and (2) at least one accelerator selected from the group consisting of a lower fatty acid anhydride, ketone and an aldehyde, and further oxidizing the thus obtained oxidation product with an oxidant selected from the group consisting of a peroxide, hypohalogenate and molecular oxygen in an aqueous alkali solution or a mixture of an aqueous alkali solution and an organic solvent.

4,212,814

BIS-2-FURANIDYL ETHER AND METHOD OF PREPARATION

Eva Schönberger, Givatayim; Zabar Sasson, Rehovoth, and Uri Michael, Natanya, all of Israel, assignors to Abic, Ltd., Israel

Division of Ser. No. 841,023, Oct. 11, 1977. This application Apr. 30, 1979, Ser. No. 34,422

Claims priority, application Israel, Oct. 12, 1976, 50671

Int. Cl.[2] C07D *307/20*

U.S. Cl. 260—347.8 **6 Claims**

1. Bis-2-furanidyl ether.

2. Method of producing bis-2-furanidyl ether, which comprises reacting 2,3-dihydrofuran with water in the presence of a catalytic amount of an acidic catalyst at a pH below 2.5 to form bis-2-furanidyl ether, and distilling off the thus formed ether.

4,212,815

PREPARATION OF VINYLENE FLUORIDES

George A. Boswell, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 799,124, May 20, 1977, abandoned. This application Jul. 5, 1978, Ser. No. 922,048

Int. Cl.[2] C07J *9/00*

U.S. Cl. 260—397.2 **9 Claims**

1. In an improved process for preparing a vinylene fluoride, the improvement comprising reacting under substantially anhydrous conditions in an inert polar solvent at a temperature of −40° C. to about +80° C. a ketone having at least one hydrogen atom on an alpha carbon atom and a disubstitutedaminosulfur trifluoride of the formula RR^1NSF_3 wherein each R and R^1, alike or different, is a primary alkyl group of 1–4 carbon atoms, or when taken together R and R^1 are $-(CH_2)_4-$, $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$, and recovering a vinylene fluoride.

4,212,816

CARBOXYLIC ACID ESTERS OF PENTAERYTHRITOL

Karl-Heinz Hentschel; Rolf Dhein; Hans Rudolph, all of Krefeld; Karl Nützel, Neulussheim; Klaus Morche, Mannheim, and Wolfgang Krüger, Schwetzingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,389

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758780

Int. Cl.[2] C09F *5/08*; C10M *1/24*

U.S. Cl. 260—410.6 **1 Claim**

1. An ester base stock which comprises pentaerythritol, cyclohexyl carboxylic acid, "isostearic acid" and at least one other C_6–C_{16} saturated aliphatic monocarboxylic acid, the number of carbon atoms per ester molecule being between 47 and 51, from 22 to 54 equivalent % of the alcoholic hydroxyl groups being esterified with cyclohexyl carboxylic acid, from 22 to 40 equivalent % with "isostearic acid" and from 20 to 56 equivalent % with at least one other C_6–C_{16} saturated aliphatic

monocarboxylic acid and the content of esterfied cyclohexyl carboxylic acid being at least equivalent to that of "isostearic acid."

4,212,817

CONTROL OF HIGHLY EXOTHERMIC CHEMICAL REACTIONS

Herbert Schmid, Wolfratshausen; Helmut Schneider, Grunwalt, and Allan Watson, Ottobrunn, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 19, 1975, Ser. No. 588,515

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1974, 2430769

Int. Cl.[2] C07C *1/04*

U.S. Cl. 260—449 M 10 Claims

1. A process for conducting an exothermic chemical reaction comprising:

(a) passing reactants into a reaction chamber zone, and within said reaction zone transferring exothermic heat of reaction indirectly to a liquid coolant in order to at least partially vaporize said liquid, and withdrawing resultant vaporized coolant from said reaction zone;

(b) measuring the temperature inside said reaction zone, and comparing said temperature inside said reaction zone to a fixed maximum design temperature; and

(c) when said temperature in said reaction zone intermittently exceeds said fixed maximum design temperature, surging at least a portion of said withdrawn resultant vapor from step (a) directly into said reaction zone to admix with the reactants and products in order to lower the temperature rapidly in said reaction zone to below the fixed maximum design temperature and

wherein said chemical reaction is effected in several series-connected reaction zones, each zone being provided with a catalyst mass, wherein at least in the first reaction zone the catalyst mass is dimensioned so that the reaction velocity of the reactants is sufficient to produce a desired approach toward the equilibrium, but wherein not more than 95% equilibrium is attained, based on the theoretical quantity of product.

4,212,818

PROCESS FOR THE PRODUCTION OF AMINOMALONIC ACID DINITRILE AS AN AMINOMALONIC ACID DINITRILTOSYLATE PRECIPITATE OR AS AN ACETYLAMINOMALODINITRILE PRECIPITATE

Hans Junek, and Martin Mittelbach, both of Graz, Austria, assignors to Lonza Ltd., Gampel, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,842

Claims priority, application Switzerland, Jan. 20, 1978, 611/78

Int. Cl.[2] C07C *121/42, 121/60*

U.S. Cl. 260—465.4 11 Claims

1. A process for the production of aminomalonic acid dinitrile as an aminomalonic acid dinitriltosylate precipitate or as an acetylaminomalodinitrile precipitate comprising converting a malonic acid dinitrile reactant selected from the group consisting of oximinomalonic acid dinitrile and phenylazomalonic acid dinitrile to aminomalonic acid dinitrile by reducing the malonic acid dinitrile reactant with hydrogen at a hydrogen pressure of about 4 to 6 atmospheres and at temperatures of about 10° to 80° C. in the presence of a Raney nickel catalyst and a solvent selected from the group consisting of tetrahydrofurane and acetic anhydride, and precipitating and isolating the resulting aminomalonic acid dinitrile as a precipitate selected from the group consisting of aminomalonic acid dinitriltosylate and acetylaminomalodinitrile, said aminomalonic acid dinitriltosylate being precipitated by treating the resulting aminomalonic dinitrile with p-toluenesulfonic acid.

4,212,819

PROCESS FOR THE PREPARATION OF BENZOYL HALIDE AND HALOSULFONYLBENZOYL HALIDE

F. Howard Day, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

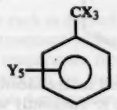
Continuation-in-part of Ser. No. 839,045, Oct. 3, 1977, Pat. No. 4,110,373. This application Jul. 10, 1978, Ser. No. 923,411

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] C07C *51/58, 63/10, 143/38, 143/40*

U.S. Cl. 260—543 R 9 Claims

1. A process for the co-production of benzoyl halide and meta-halo-sulfonylbenzoyl halide by the reaction of benzotrihalide with sulfuric acid which comprises gradually adding to sulfuric acid, a benzotrihalide of the formula:



wherein X is bromine or chlorine and Y is individually selected from the group consisting of fluorine, chlorine, bromine, iodine, alkyl, halo-substituted alkyl, aryl, and hydrogen, with the proviso that at least one Y substituent at a meta-position is hydrogen.

4,212,820

ACRYLAMIDE OR METHACRYLAMIDE ALKOXYPROPYL QUATERNARY COMPOUNDS

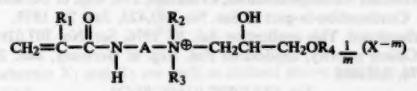
Philip Hotchkiss; Robert M. Gipson, and Edward C. Y. Nieh, all of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,317

Int. Cl.[2] C07C *103/70*

U.S. Cl. 260—561 N 4 Claims

1. An acrylamide or methacrylamide alkoxypropyl quaternary characterized by the following structural formula:



where R_1 is hydrogen or methyl, R_2 and R_3 are lower alkyl, R_4 is a linear or branched alkyl group containing 7-20 carbon atoms, X is an anion of an organic or mineral acid having a valence m and A is a divalent lower alkyl group.

4,212,821

PROCESS OF MAKING DIAMINODIPHENYLMETHANES

Edward T. Marquis, and Walter H. Brader, Jr., both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 927,266, Jul. 21, 1978, abandoned. This application Feb. 16, 1979, Ser. No. 12,680

Int. Cl.[2] C07C *85/18*

U.S. Cl. 260—570 D 3 Claims

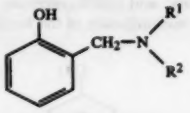
1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a hydroxy ethane sulfonic acid catalyst and recovering said catalyst by extraction of the salt thereof with water.

4,212,822
PREPARATION OF O-DIALKYLAMINOMETHYLPHENOLS

Hermann Arold, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 30, 1976, Ser. No. 755,905
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601782
Int. Cl.² C07C 85/18
U.S. Cl. 260—570.9 11 Claims

1. In the preparation of an o-dialkylaminomethylphenol of the formula



in which R^1 and R^2 each independently is alkyl with 1 to 6 carbon atoms, or R^1 and R^2 conjointly with the adjacent nitrogen atom, form a five-membered or six-membered ring, by reacting phenol, formaldehyde or paraformaldehyde and an amine of the formula

the improvement which comprises carrying out the reaction in the presence of an organic liquid which is immiscible with water but which is a solvent for the phenol and amine employed as starting materials and the o-dialkylaminomethylphenol which is formed.

4,212,823
PROCESS FOR THE MANUFACTURE OF 3-AMINOPHENOLS BY DEHYDROGENATION OF 3-AMINOCYCLOHEXENONES

Werner H. Müller, Bremthal, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 542,423, Jan. 20, 1975, abandoned. This application Jul. 20, 1976, Ser. No. 707,016
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1974, 2402695
Int. Cl.² C07C 91/44, 85/24
U.S. Cl. 260—571 9 Claims

1. A process for the manufacture of a 3-aminophenol which comprises dehydrogenating, at a temperature of from 150° to 300° C., a pressure of up to 20 atmospheres and in the liquid phase, a 3-aminocyclohexenone which is a primary or secondary amine.

9. The compound N,N'-bis-(3-hydroxyphenyl)-o-dianisidine.

4,212,824
HYDROGENATION CATALYST WITH IMPROVED METALLIC DISTRIBUTION, ITS PREPARATION AND USE FOR THE REDUCTION OF AROMATIC NITRO COMPOUNDS

Robert L. Seagraves, Pennsville, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 11, 1978, Ser. No. 923,568
Int. Cl.² C07C 85/11; B01J 21/18, 23/42, 23/74
U.S. Cl. 260—580 17 Claims

1. A hydrogenation catalyst consisting essentially of an oleophilic carbon black support having a surface area of 20–100 m^2/g, said support having on its surface about 1–5 percent by weight of the support of platinum metal and iron in the form of its oxide or hydroxide, the molar ratio of iron to platinum being in the range of about 4–8:1, said catalyst having:

(1) a ratio of platinum/carbon ESCA intensity ratio to the total platinum content, expressed by its weight percent concentration/100, of at least about 2.4; and

(2) a ratio of the iron/carbon ESCA intensity ratio to the platinum/carbon ESCA intensity ratio of at least about 1.0.

4,212,825
ALDOL CONDENSATION AND HYDROGENATION PROCESS USING A CATALYST OF NICKEL AND COBALT TOGETHER WITH ZINC OXIDE AND ANOTHER METAL OF GROUPS VIII, IIB, IIIA, IVA AND VA OF THE PERIODIC TABLE

Axel Nissen, Leimen; Gerd Hellen, Frankenthal; Ekkehard Sapper, Ludwigshafen; Werner Fliege, Otterstadt, and Arnold Wittwer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 802,112, May 31, 1977, abandoned. This application Nov. 16, 1977, Ser. No. 851,934
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625541
Int. Cl.² C07C 45/00
U.S. Cl. 568—313 9 Claims

1. In a process for the manufacture of a saturated carbonyl compound by aldol condensation of a low molecular weight aldehyde or ketone of not less than 2 or 3 carbon atoms, respectively, with itself or with another such low molecular weight aldehyde or ketone and hydrogenation of the aldol condensation product at above 150° C. in the liquid phase and in the presence of a catalyst, the improvement which comprises:

carrying out said condensation and hydrogenation with said catalyst consisting essentially of the components:

(a) nickel and cobalt compounds;

(b) zinc oxide; and

(c) a catalytically active amount of a compound of a metal selected from the group consisting of iron, arsenic, antimony, bismuth, gallium, indium, thallium, germanium, tin, lead, cadmium and mercury,

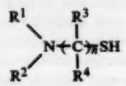
said components being applied to a chemically inert carrier and said components being obtained in a catalytically active form by drying the catalyst, calcining at about 520° C. and reducing with hydrogen at about 300° C.

4,212,826
PROCESS FOR PRODUCING CYSTEAMINES AND/OR CYSTAMINES

Hachiro Yamaguchi, Hiroshima, Japan, assignor to Wakunaga Yakuhin Kabushiki Kaisha, Osaka, Japan

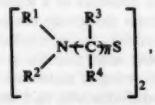
Filed Jun. 5, 1979, Ser. No. 45,679
Claims priority, application Japan, Jun. 16, 1978, 53-72060
Int. Cl.² C07C 85/24
U.S. Cl. 260—583 EE 5 Claims

1. A process for producing cysteamines of the formula



(I)

and/or cystamines of the formula



(II)

wherein n is 1, 2, or 3, and R^1, R^2, R^3, and R^4 are respectively

and independently H or CH_3, a plurality of R^3 and R^4 not necessarily being the same when n is 2 or 3, which process comprises reacting (A) an aminoalkyl sulfate ester and (B) hydrogen sulfide and an alkali polysulfide formed from an alkali hydrogen sulfide and sulfur.

4,212,827

MANUFACTURE OF CANTHAXANTHIN

Joachim Paust, Neuhofen; Joachim Schneider, and Hagen Jaedicke, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 705,992, Jul. 16, 1976, abandoned. This application Oct. 13, 1977, Ser. No. 841,697

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1975, 2534805

Int. Cl.² C07C *45/02*

U.S. Cl. 568—347 **15 Claims**

1. A process for the manufacture of canthaxanthin by oxidizing β-carotene, retro-dehydro-carotene, echinenone, 4'-hydroxyechinenone or isozeaxanthin which comprises carrying out the oxidation with chloric or bromic acid or with a salt of chloric or bromic acid in a proportion of 1 to 100 moles of said acid or salt of said acid per mole of β-carotene, retro-dehydrocarotene, echinenone, 4'-hydroxyechinenone or isozeaxanthin, in the presence of bromine or iodine or of an oxide or oxo-acid of selenium or of an element of group Va, VIa or VIIa of the periodic table, or a salt of such an oxo-acid, or of an oxide of an element of group VIII of the periodic table as a catalyst, and in the presence of an inert diluent or solvent, at from 0° to 100° C.

4,212,828

NOVEL PROCESS FOR ASYMMETRIC SYNTHESIS OF OPTICALLY ACTIVE 2-ALKANOYL-1,2,3,4-TETRAHYDRO-2-NAPHTHOL COMPOUNDS

Kenji Koga, and Shiro Terashima, both of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

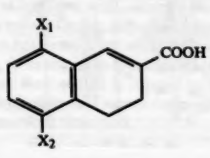
Filed Nov. 24, 1978, Ser. No. 963,174

Claims priority, application Japan, Apr. 14, 1978, 53-44388

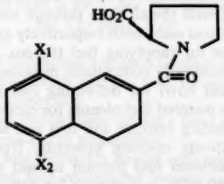
Int. Cl.² C07C *45/00, 65/14*

U.S. Cl. 568—314 **1 Claim**

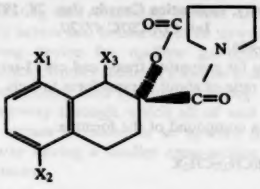
1. A process for asymmetric synthesis of optically active 2-alkanoyl-1,2,3,4-tetrahydro-2-naphthol compounds which comprises treating L-proline or the methyl or ethyl ester thereof with a carboxylic acid of the formula:



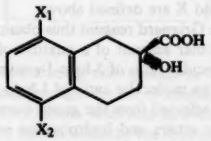
wherein X_1 and X_2 are each hydrogen or lower alkoxy in an organic solvent at a temperature from 0° C. to reflux temperature, subjecting the resulting N-(α,β-unsaturated acyl)-L-proline derivative of the formula:



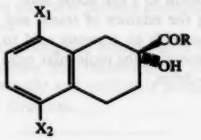
wherein X_1 and X_2 are each as defined above to asymmetric halolactonization by treatment with N-bromosuccinimide in an organic solvent at a temperature from −20° C. to room temperature, subjecting the resultant optically active halolactone of the formula:



wherein X_1 and X_2 are each as defined above and X_3 is halogen to dehalogenation by treatment with a trialkyltin hydride in an organic solvent at a temperature from room temperature to 200° C. and then hydrolysis by treatment with water or an organic solvent at room temperature to 100° C., and treating the thus obtained optically active 2-hydroxy-1,2,3,4-tetrahydro-2-naphthoic acid of the formula:



wherein X_1 and X_2 are each as defined above with an alkyl metal compound in an organic solvent at a temperature from 0° to 100° C. to obtain an optically active 2-alkanoyl-1,2,3,4-tetrahydro-2-naphthol compound of the formula:



wherein X_1 and X_2 are each as defined above and R is lower alkyl.

4,212,829

PREPARATION OF M-(P-BROMOPHENOXY)BENZALDEHYDE

Tadashi Ohsumi, Kyoto, and Nobushige Itaya, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

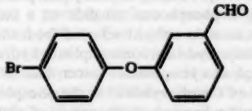
Filed Jan. 22, 1979, Ser. No. 5,170

Claims priority, application Japan, Jan. 25, 1978, 53/7760

Int. Cl.² C07C *45/00*

U.S. Cl. 568—433 **3 Claims**

1. A process for preparing m-(p-bromophenoxy)benzaldehyde of the formula;



which comprises slowly adding bromine or bromine chloride to m-phenoxybenzaldehyde at room temperature or below.

4,212,830
PROCESS FOR PREPARING INSECT PHEROMONES

Charles J. Wiesner, 123 McKeen St., Fredericton, New Brunswick, Canada (E3A 2P9)

Division of Ser. No. 808,420, Jun. 20, 1977. This application Nov. 16, 1978, Ser. No. 961,156
Claims priority, application Canada, Jan. 28, 1977, 270624
Int. Cl.² C07C 47/20
U.S. Cl. 568—486 7 Claims

1. A process for preparing trans- and cis-11-tetradecenal at the molecular ratio of about 9 trans- form to 1 cis- form which comprises:

(1) treating a compound of the formula:

$$(RO)_2CH(CH_2)_7CH_2X$$

wherein each R separately denotes (lower) alkyl, and X is a halogen with at least an equimolecular amount of magnesium in an inert solvent selected from the group consisting of dialkyl ethers, cyclic ethers and hydrocarbon solvents and the mixtures thereof to form a Grignard reagent having the formula:

$$(RO_2)CH(CH_2)_7CH_2MgX$$

wherein R and X are defined above;

(2) reacting the Grignard reagent thus obtained with at least an equimolecular amount of a mixture of approximately 40% by molecular ratio of 3-halo-1-pentene and approximately 60% by molecular ratio of 1-halo-2-pentene in an inert solvent selected from the group consisting of dialkyl ethers, cyclic ethers and hydrocarbon solvents and the mixtures thereof to form a mixture of trans- and cis-1,1-dialkoxy-11-tetradecene of the formula:

$$(RO)_2CH(CH_2)_9CH{=}CH)CH_2CH_3$$

wherein R is as defined above, at the molecular ratio of about 9 transform to 1 cis- form; and

(3) hydrolyzing the mixture of trans- and cis-1,1-dialkoxy-11-tetradecene with an aqueous acid to form trans- and cis-11-tetradecenal at the molecular ratio of about 9 trans- form to 1 cis- form.

4,212,831
PROCESS FOR PRODUCING TRIPHENYLPHOSPHINE

Yoshiki Nakayama, Shimizu; Kazushige Hirao, Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Company, Limited, Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,620
Claims priority, application Japan, Mar. 25, 1978, 53-34694
Int. Cl.² C07F 9/50
U.S. Cl. 568—17 3 Claims

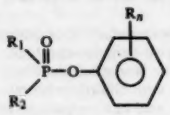
1. A process for producing triphenylphosphine which consists of adding a phosphorus trihalide to a dispersion of a phenylalkali in an inert solvent selected from the group consisting of aromatic hydrocarbons, aliphatic hydrocarbons and mixtures thereof; at a temperature lower than 50° C.; wherein the molar ratio of the phenylalkali to the phosphorus trihalide is 3 or more; and wherein said dispersion of a phenylalkali is formed by dispersing an alkali metal in said solvent and then adding a halobenzene to form said phenylalkali dispersion.

4,212,832
PRODUCTION OF HIGH VISCOSITY PHOSPHORIC AND PHOSPHONIC ACID ARYL ESTERS

Karl-Heinz Mitschke, Odenthal, and Reinhard Schliebs, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,987
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739843
Int. Cl.² C07F 9/09
U.S. Cl. 260—930 4 Claims

1. A process for the production of a relatively high molecular weight phosphoric or phosphonic acid aryl ester, comprising reacting a phosphoric or phosphonic acid aryl ester of the formula



in which

R is a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, a halogen atom, an aryloxy group, or an aryl group;

R_1 is a group of $OC_6H_mR_n$ in which $m+n=5$, an alkyl group, a haloalkyl group or an optionally substituted aryl group;

R_2 is a group of $OC_6H_mR_n$, in which $m+n=5$; and

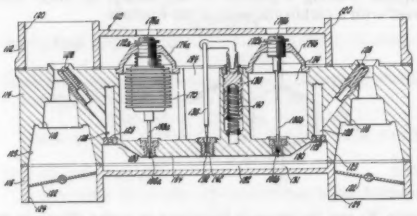
n is from 1 to 3,

with formaldehyde at a temperature of about 10° to 120° C. and in the presence of at least 1.5 moles of sulphuric acid per mole of ester.

4,212,833
CARBURETOR

David L. Harrington, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1976, Ser. No. 681,786
Int. Cl.² F02M 19/06
U.S. Cl. 261—23 A 2 Claims



1. An internal combustion engine carburetor comprising first and second mixture conduits through which air may flow to the engine, first and second discharge nozzles respectively opening into said mixture conduits for delivering fuel into and mixing such fuel with the air flow through said mixture conduits, first and second main wells respectively extending to said discharge nozzles for supplying fuel thereto, a fuel bowl, a plurality of independently controllable metering orifices opening from said fuel bowl for delivering fuel therefrom at a controlled rate, a metered fuel plenum for receiving fuel delivered by said metering orifices, and first and second flow restrictions respectively opening upwardly from the highest region of said metered fuel plenum to said main wells for dividing fuel received by said plenum for delivery to said first and second main wells, whereby fuel may be initially metered

in a unified flow and subsequently divided for delivery to said first and second mixture conduits.

4,212,834

FUEL SUPPLY SYSTEM

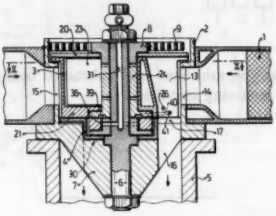
Siegfried Holzbaur, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 970,061

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803267

Int. Cl.² F02M 9/08

U.S. Cl. 261—44 A **11 Claims**



1. In a fuel supply system for internal combustion engines provided with an intake manifold defining a flow port, an air-flow sensor having an axis extending in the direction of flow, a manually controlled throttle element disposed in tandem with said air-flow sensor within said manifold, a fuel metering valve means, said air-flow sensor including a reset force means and, a rotary element rotatable about said axis, said rotary element of air-flow sensor further being arranged to control said fuel metering valve means to control fuel in accordance with air flow, the improvement wherein said rotary member has a circular periphery and a control chamber defined therewithin, said rotary member including means defining at least one axial recess which cooperates with said manifold flow part to control an air-flow section therebetween, said air-flow sensor further including means defining at least one opening in said control chamber arranged to communicate with said intake manifold between said air-flow sensor and said throttle element, said rotary member including radially extending rib elements limiting said control chamber, said control chamber having at least one wall securely fixed to said manifold, said air-flow sensor further includes means wherein intake manifold pressure upstream from said air-flow sensor acts on said rib elements, whereby, as induced air increases said rotary element of said air-flow sensor is rotated to increase the air-flow section controlled by said means defining said at least one recess and said manifold flow port.

4,212,835

METHOD AND APPARATUS FOR INTRODUCING A QUENCH STREAM IN UPFLOW GAS-LIQUID CONTACTORS

Robert M. Koros, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 6, 1971, Ser. No. 140,747

Int. Cl.² B01F 3/04

U.S. Cl. 261—116 **3 Claims**

1. A method of contacting a quench or other secondary fluid stream with a mixed phase primary fluid stream in an up-flow contactor which comprises:

(a) flowing said mixed phase primary fluid stream upward through a constricted passageway;

(b) combining said secondary stream with said primary fluid stream within said constricted passageway; so that the combined primary and secondary streams flow cocurrently upward;

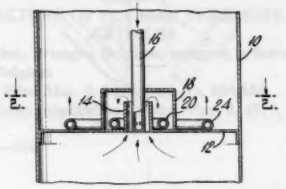
(c) flowing said combined primary and secondary fluid streams upward and thereafter;

(d) changing the flow direction of said combined primary and secondary streams to prevent separation of the phases; and

(e) redistributing said combined streams cocurrently and uniformly across said contactor in an upward direction.

2. A mixing device for up-flow gas-liquid contactors wherein a quench or other secondary stream is contacted with a mixed phase primary fluid stream comprising:

(a) a passageway through which all of said mixed phase primary stream is passed in an upward direction, said passageway having a smaller cross-section than that of said contactor;



(b) means for introducing said quench or other secondary stream into said passageway for combining said quench or other secondary stream with said upward flowing mixed phase primary stream whereby the combined streams flow cocurrently upward, said means for introducing quench or other secondary stream into said passageway comprising a sparger pipe having openings located to evenly distribute said quench or other secondary stream;

(c) continuation passageway means operably disposed relative to said passageway for causing the combined streams to change flow direction thereby preventing separation of the phases; and

(d) means for extracting said streams from said continuation passageway means and redistributing said mixed phase streams occurrently and uniformly across said contactor in an upward direction.

4,212,836

METHOD OF FORMING THIN THERMOPLASTIC ELEMENTS OF COMPLEX CURVATURE

Shy-Hsien Wu, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 5, 1978, Ser. No. 938,871

Int. Cl.² B29D 11/00

U.S. Cl. 264—1 **4 Claims**

1. A method for making a preformed curved plastic element for a glass-plastic lens comprising both glass and plastic elements, the glass element having a curved surface of aspheric or compound curvature and the plastic element having a curvature precisely matching the aspheric or compound curvature of said curved surface of the glass element, which comprises the steps of:

(a) molding a low-melting-point alloy against said curved surface of the glass element to provide a rigid pressing piece having a pressing surface substantially conforming to said curved surface of said glass element;

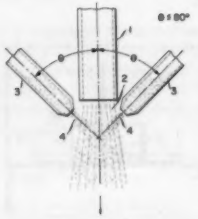
(b) covering the pressing surface with a smooth, thin elastic covering layer to provide a covered pressing surface; and

(c) hot-pressing a section of thermoplastic film between said curved surface of the glass element and said covered pressing surface at a temperature sufficient to exactly conform said section of thermoplastic film to said curved surface of said glass element.

4,212,837
METHOD AND APPARATUS FOR FORMING SPHERICAL PARTICLES OF THERMOPLASTIC MATERIAL

Toshihiko Oguchi, Kawasaki; Ichiyoshi Saito, Tokyo; Tsuyoshi Ueno, and Tsutomu Kubo, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 4, 1978, Ser. No. 902,859
Claims priority, application Japan, May 4, 1977, 52-51514; May 14, 1977, 52-55839; May 14, 1977, 52-55840
Int. Cl.[2] B29C 23/00
U.S. Cl. 264—15 12 Claims



1. A method for forming spherical particles of thermo-plastic material comprising:

(a) blowing a stream of gas containing therein thermoplastic particles having diameters not greater than 100 μm at a concentration of 2 kg/m^3 or less from a point adjacent to, and separated by a gap from, the circumference of a downwardly ejected-jet stream of pressurized hot gas into said jet stream and at an angle of 80° or less in relation to the direction of the hot gas stream, thereby melting the particles of the thermoplastic material into droplets only in said gas stream to cause the reformation of the shape of the individual droplets into substantially spherical form and;

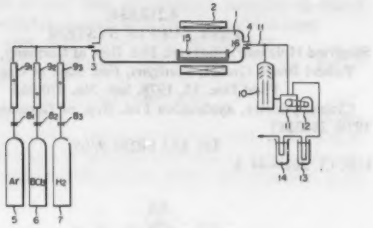
(b) immediately cooling said reformed thermoplastic droplets to a temperature below their melting point and in their reformed shape by means of cooling air drawn downwards through said gap between the jet stream of the hot gas and the stream of thermoplastic particles, and by means of ambient air, thereby solidifying said reformed thermoplastic droplets.

4,212,838
PROCESS FOR MANUFACTURE OF CANTILEVER FOR PICKUP CARTRIDGE

Koichi Azuma, Osaka; Masahiro Nagasawa, Hirakata; Hiroshi Yamazoe, Katano, and Masaki Aoki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 13, 1978, Ser. No. 941,908
Claims priority, application Japan, Sep. 20, 1977, 52-113520; Sep. 20, 1977, 52-113521
Int. Cl.[2] C23C 13/04, 11/00
U.S. Cl. 264—25 5 Claims

1. A process for manufacture of cantilevers for pickup cartridges which comprises providing a base in the form of a solid rod or a pipe from a material which may be chemically or electrolytically etched, forming by vapor deposition a layer of a substance exhibiting a modulus of elasticity ratio higher than

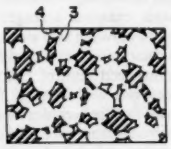


5000 Kg/mm^2 on said base, said substance being boron or a boride, and removing said base.

4,212,839
PROCESS FOR PREPARING OPEN-CELL SPONGE RUBBER PRINTING MATERIAL HAVING SMALL AND LARGE INTERCONNECTED CELLS

Takaji Funahashi, No. 1, 2-chome, Kitatakasho-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Nov. 10, 1977, Ser. No. 850,452
Claims priority, application Japan, Nov. 12, 1976, 51-136503; Nov. 26, 1976, 51-142482
Int. Cl.[2] B29D 27/00
U.S. Cl. 264—45.3 3 Claims

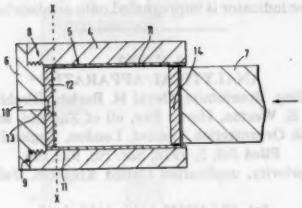


1. In process for preparing a sponge rubber printing material having numerous open cells which comprises mixing a starting rubber material, a curing agent, a filler and a material for forming cells, introducing the resulting mixture into a mold, heating the mixture to effect curing and then washing the cured product to remove cell formers, the improvement comprising using a combination of a finely divided soluble starch having a particle size within the range of from 0.01 to 0.103 mm to form small open cells (a) and a fine powder of a readily water-soluble salt selected from the group consisting of sodium chloride, sodium sulfate, sodium nitrate, and mixtures thereof, having a particle size within the range of from 0.149 to 0.498 mm to form large open cells (b) as the material for forming cells, the amount of the starch being 200 to 1200 parts by weight of the starting rubber and the ratio of the amount of starch to readily water-soluble salt being in the range of from 1:9 to 1:3, whereby the said small and large open cells (a) and (b) are uniformly distributed throughout the rubber substrate in a state wherein said small and large open cells (a) and (b) are interconnected with one another through interconnecting passages free from obstruction.

4,212,840
EXTRUSION APPARATUS AND METHOD FOR EXTRUDING ABRASIVE PASTES

George S. Cliff, and Jack Willocks, both of Macclesfield, England, assignors to Imperical Chemical Industries Limited, London, England

Filed Sep. 8, 1978, Ser. No. 940,872
Claims priority, application United Kingdom, Sep. 19, 1977, 38878/77
Int. Cl.² B28B 7/36
U.S. Cl. 264—338 5 Claims



1. An extrusion apparatus including a piston and cylinder; said cylinder having a bore generally complementary to said piston and leading at its inner end to an external orifice, said bore having a side-wall, and operating means associated with said piston for causing paste-like material to be compressed within said bore and extruded through said external orifice; wherein the improvement consists essentially of

a lining system for said cylinder comprising a tubular liner, a first replaceable disc, and a second replaceable disc, said liner and first and second discs each composed of plastics material selected from the group consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon;

said tubular liner formed as a thin sheet and having appropriate dimensions and resilience so as to assume an essentially tubular form without overlap when inserted into said bore, closely fitting against and substantially covering said side-wall of said bore;

said first replaceable disc substantially closing the end of said liner nearest said external orifice and defining a central hole having a diameter not larger than the diameter of said orifice; and

said second replaceable disc substantially closing the other end of said liner, and shaped so that it is capable of slidable movement within the space enclosed by said liner under the influence of said piston and said operating means, so that said extrusion apparatus is useful for extruding dental filling compositions or like abrasive paste-like materials.

5. A method of extruding an abrasive paste-like dental filling composition utilizing an extrusion apparatus comprising a piston and cylinder, the cylinder having a bore generally complementary to the piston and leading at its inner end to an external orifice, and an operating device for the piston; said method comprising the steps of

(a) preventing frictional wear occuring to the piston and the bore during utilization thereof by (i) cutting a rectangular thin sheet composed of a material consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon, to size to form a sheet liner, and inserting into the bore the thin sheet liner so that it assumes a tubular form without overlap, closely fitting against and substantially covering the side-wall of the bore; (ii) inserting into the bore a first replaceable disc having a central opening and composed of a material consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon, so that the first disc closes the end of the liner nearest the external orifice with the central opening therein in-line with the orifice, and having a diameter no larger than the diameter of the orifice; and (iii) inserting into the bore a second replaceable disc composed of a material consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon, so that the second disc is capable of slidable movement within the space enclosed by the liner;

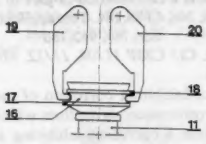
(b) moving the piston with the operating device to extrude the filling composition from between the first and second discs and liner through the orifice; and

(c) replacing the tubular liner and first and second discs when they become worn.

4,212,841
MANUFACTURE OF HOLLOW THERMOPLASTIC ARTICLES

Edmond Michel, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Mar. 8, 1978, Ser. No. 884,434
Claims priority, application France, Mar. 9, 1977, 77 07443
Int. Cl.² B29C 17/07
U.S. Cl. 264—530 11 Claims



1. In a process for producing hollow bodies from a thermoplastic material, which includes producing preforms from thermoplastic material by molding, transferring each resulting preform to a final blow-mold, and blow-molding each preform in a blow-mold to produce a desired final body, the improvement wherein said step of producing comprises forming a false neck on each preform and forming at least one positioning lug on the false neck of each preform, and said step of transferring comprises: providing a stop adjacent the false neck of each preform at a defined location about the longitudinal axis of that preform; and causing each preform to undergo rotational movement about its longitudinal axis until its associated lug encounters, and thus comes into blocking engagement with, the stop associated with that preform, whereby each preform is brought into a predetermined angular orientation about its longitudinal axis relative to the blow-mold by the action of the positioning lug.

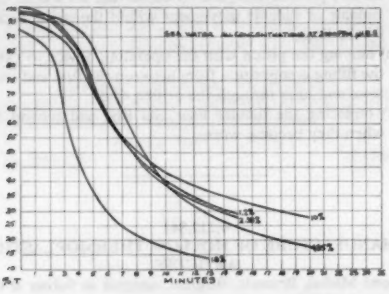
4,212,842
CORROSION INHIBITION

Francis J. Hartke, Bridgeton, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 24, 1975, Ser. No. 561,605
Int. Cl.² C23F 15/00
U.S. Cl. 422—12 16 Claims

1. A process of inhibiting corrosion of metals by an aqueous system which comprises adding an aqueous soluble hydrohalic,

sulfuric, sulfurous or carboxylic acid salt of a normally water insoluble heterocyclic amine to such an aqueous system having



a pH above about 6, which converts said salt to the free amine, which coats the metal with a corrosion inhibiting film.

4,212,843

Δ-2 TETRAHYDROPYRIMIDINES AS CORROSION INHIBITORS

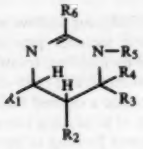
Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 802,347, Jun. 1, 1977, Pat. No. 4,146,714, which is a continuation-in-part of Ser. No. 384,439, Aug. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 292,494, Sep. 27, 1972, Pat. No. 4,085,104. This application Sep. 15, 1978, Ser. No. 942,733

Int. Cl.² C23F *11/04, 11/12, 11/14*

U.S. Cl. 422—16 **7 Claims**

1. A process of inhibiting corrosion of metals in a system containing a corrosive aqueous medium which comprises adding to said medium a corrosion inhibiting amount of a Δ-2 tetrahydropyrimidine of the formula



where each R may be the same or different and is hydrogen or alkyl, aryl, cycloalkyl, alkaryl alkoxyaryl, aralkyl, or heterocyclic.

4,212,844

RAPID DIAGNOSTIC COMPOSITION FOR THE DETERMINATION OF URIC ACID IN BODY FLUIDS

Wolfgang Werner, Mannheim-Vogelstang, and Walter Ritters-dorf, Mannheim-Waldhof, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,518

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744046

Int. Cl.² G01N *21/06, 31/22, 33/16*

U.S. Cl. 422—56 **9 Claims**

1. Rapid diagnostic composition for the determination of uric acid in body fluids by inversion colorimetry comprising at least one adjuvant material selected from the group consisting of buffers, wetting agents, and thickening agents and, as an indicator, a radical of the formula

in which

R is a lower alkyl radical and

Me is an alkali metal atom or an ammonium group.

7. Rapid diagnostic composition as claimed in claim 1, wherein the indicator is impregnated onto an absorbent carrier.

4,212,845

ANALYTICAL APPARATUS

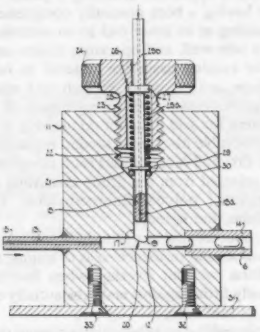
David Stelling, Broadstairs; David H. Barker, Birchington, and Terence E. Weston, Herne Bay, all of England, assignors to The Rank Organisation Limited, London, England

Filed Jul. 5, 1978, Ser. No. 922,109

Claims priority, application United Kingdom, Jul. 6, 1977, 28286/77

Int. Cl.² G01N *1/10, 1/14, 1/18*

U.S. Cl. 422—82 **11 Claims**



1. In a continuous flow analyser wherein a stream of liquid is divided prior to analysis into segments by the introduction of gas bubbles, apparatus for effecting said division of the liquid stream, said apparatus comprising

means defining a conduit along which the liquid stream can flow

means defining a chamber communicating with said conduit at one side thereof, and

means defining a duct of smaller cross section than that of said chamber, said duct communicating with said chamber and being connectable to a source of gas under pressure such that, in use of the apparatus, when a stream of liquid is flowing in said conduit, gas can be introduced through said duct into said chamber at a controlled rate, the gas pressure increasing in the chamber until it overcomes the surface tension of the liquid and the pressure therein and a bubble of gas enters the stream of liquid.

4,212,846

BREATHING APPARATUS CHEMICAL CANISTER WITH DUST SEAL

Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

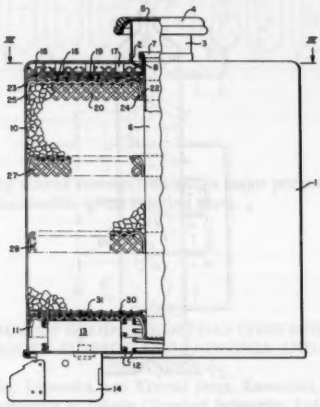
Filed Jan. 19, 1979, Ser. No. 4,660

Int. Cl.² B01J *7/00;* C10H *7/00*

U.S. Cl. 422—122 **2 Claims**

1. A breathing apparatus chemical canister comprising a can

having a neck extending upwardly from its top, a tube extending downwardly in the can from the neck to a point near the bottom of the can, a body of chemical granules in the can spaced from its top and bottom, an upper sheet of filtering material covering the top of said body and provided with an opening receiving said tube, said sheet being provided with an inner downwardly extending flange engaging said tube and with an outer downwardly extending flange engaging the side of the can, an upper screen disposed between said chemical



body and filter sheet in engagement with both and having inner and outer downwardly extending flanges pressing said filter sheet flanges against said tube and side of the can to form seals, a lower sheet of filtering material like said upper sheet around the lower end of said tube beneath the chemical body, and a lower screen like said upper screen supporting the lower sheet, the inner and outer flanges of the lower screen pressing the flanges of the lower filter sheet against the tube and side of the can to form seals.

4,212,847

APPARATUS FOR CARRYING OUT POLYMERIZATIONS FROM THE GAS PHASE

Dieter Volmer, Wesseling; Juergen Schwind, Meschenich; Erich Kolk, and Hans Frielingsdorf, both of Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

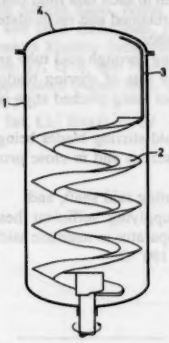
Filed Mar. 22, 1978, Ser. No. 888,926

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714812

Int. Cl.² B01J *1/00, 3/00;* **C08F** *10/00*

U.S. Cl. 422—135 **4 Claims**

1. Apparatus for carrying out polymerizations from the gas phase, comprising a sealable reactor with a spiral stirrer which is rotatable in the reactor about a vertical axis to generate circulatory streams of the materials employed, wherein the stirrer rotating within the reactor is surmounted by a stirrer rod, which extends upward beyond the uppermost flight circle of the stirrer and is attached to the stirrer at a distance from the axis of the stirrer which is from 47 to 49% of the reactor diameter, the distance of the side face of the stirrer rod from the reactor wall is at least 10 mm, so that no rubbing or scraping occurs between the stirrer rod and the reactor wall, and the



surface of revolution of the moving rod matches the contour of the reactor in this zone.

4,212,848

APPARATUS AND PROCESS FOR THE MANUFACTURE OF FIBRILS

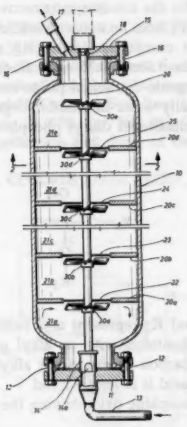
Robert E. Boehme, and Clarence R. Murphy, both of Houston, Tex., assignors to Champion International Corporation, Pittsburgh, Pa. and Gulf Oil Corporation, Stamford, Conn.

Division of Ser. No. 715,803, Aug. 19, 1976, Pat. No. 4,076,681.

This application Jul. 20, 1977, Ser. No. 817,325

Int. Cl.² B01F *1/00, 7/04*

U.S. Cl. 422—267 **1 Claim**



1. Apparatus for dissolving polymer in a liquid solvent consisting essentially of, in combination:

(a) A vertical tube having a lower fluid inlet and an upper fluid outlet,

(b) Means for pumping fluid containing polymer particles to be dissolved through said tube,

(c) A plurality of horizontal plates positioned within said tube and dividing said tube into a plurality of fluid chambers,

(d) Aligned fluid openings in each of said plates,

(e) Screens positioned within the fluid openings of each of said plates, the upper and lower limits of each of said fluid chambers being defined by their respective upper and lower screens,

(f) Said screens having different meshes, with each screen having a smaller mesh than the screen positioned below it, the upper screen in each said fluid chamber causing larger particles to be retained and recirculated within its respective fluid chamber,

(g) A shaft running through said tube and said screens,

(h) A plurality of sets of stirring blades mounted on said shaft, said blades being pitched at an angle from the plane of the screens,

(e) Each set of said stirring blades being mounted immediately below a screen and in close proximity to its lower face,

(j) Means for rotating said shaft, and

(k) Means for supplying sufficient heat to fluid passing through said apparatus to maintain said fluid at a temperature of at least 190° C.

4,212,849

SIMULTANEOUS EXTRACTION AND RECOVERY OF URANIUM AND VANADIUM FROM WET PROCESS ACIDS

Michael F. Lucid; Wilbert J. Robertson, both of Oklahoma City, and Paul D. Bowerman, Edmond, all of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 720,995, Sep. 7, 1976, abandoned. This application Jan. 13, 1978, Ser. No. 869,087

Int. Cl.[2] B01D *11/00*; C01G *56/00*

U.S. Cl. 423—10 30 Claims

1. A process for the simultaneous recovery of uranium (VI) and vanadium (V) from an aqueous acidic solution containing the same which comprises: contacting said solution in the presence of at least about 0.25 mole fluoride per mole vanadium with an organic extractant phase comprising

(a) a substantially water-immiscible organic diluent;

(b) an alkyl substituted diaryl phosphoric acid having the formula

where R_1 and R_2 represent aryl radicals at least one of which is substituted with an alkyl group and the total number of carbon atoms in the alkyl substituted diaryl phosphoric acid is at least 13 and

(c) a trialkylphosphine oxide having the formula

where R, R′ and R″ are alkyl radicals containing from 4 to 14 carbon atoms, whereby the uranium and vanadium are preferentially coextracted into the organic phase and, recovering the uranium and vanadium containing organic phase; the alkyl substituted diaryl phosphoric acid and trialkylphosphine oxide being present in the organic extractant phase in an amount sufficient to provide a molar ratio of alkyl substituted diaryl phosphoric acid to trialkylphosphine oxide of from 1:8 to 1:1.

4,212,850

METHOD FOR THE CALCINING OF LIME

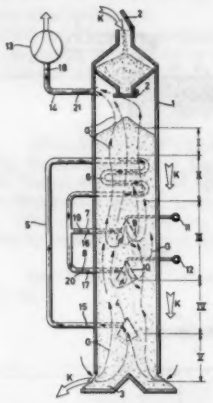
Herbert Deussner, Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,699

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705710

Int. Cl.[2] C01F *11/06*

U.S. Cl. 423—175 8 Claims



1. A countercurrent combustion method for the production of calcined lime in a furnace containing, in sequence, a preheating zone, a combustion zone, and a cooling zone which comprises:

passing the entire combustion air through the cooling zone to thereby preheat said combustion air,

withdrawing a portion of the thus preheated air from the furnace,

heating the withdrawn air in a recuperation zone located between said preheating zone and said combustion zone by contact with exhaust gases emanating from said combustion zone to approximately the limestone deacidification temperature, and

supplying the thus heated air to said combustion zone to convert the limestone into calcined lime.

4,212,851

REGENERATION OF SULFIDED DOLOMITE

Edward J. Nemeth, Mt. Lebanon Township, Allegheny County; Joseph E. McGreal, Penn Hills Township, Allegheny County, and John L. Howell, North Huntingdon Township, Westmoreland County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

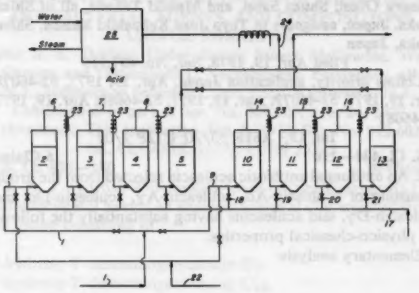
Filed Dec. 5, 1975, Ser. No. 638,118

Int. Cl.[2] C01B *17/16*; C10K *1/26*; B01J *23/92, 21/20*

U.S. Cl. 423—230 12 Claims

1. Method of regenerating calcined dolomite sulfided with sulfur from a gas stream for reuse as a desulfurizing medium comprising passing through the sulfided dolomite an oxidizing gas consisting essentially of steam and CO_2 in a volume ratio of about 5:1 to 1:5 and about 0.5% to about 20% oxygen at a

temperature in the range of about 1500° F. up to the temperature in which the crystalline structure of the dolomite becomes



permanently altered thereby rendering a major portion of the dolomite inaccessible to the reacting gases.

4,212,852

METHOD OF DEODORIZING GAS CONTAINING HYDROGEN SULFIDE AND AMMONIA AND/OR AMINES

Toshio Aibe, Toyonaka, and Kiyoshi Itoga, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed May 5, 1978, Ser. No. 905,521

Claims priority, application Japan, May 6, 1977, 52/52329; Nov. 25, 1977, 52/141836

Int. Cl.² B01J *8/00, 23/22, 23/28, 23/30*

U.S. Cl. 423—230 **2 Claims**

1. A method for deodorizing malodorous gas which comprises reacting a malodorous gas containing (1) ammonia and/or amines and (2) hydrogen sulfide, wherein the hydrogen sulfide is in stoichiometric excess with respect to the ammonia and/or amines, with oxygen in the presence of activated carbon having supported thereon at least a metal compound selected from the group consisting of vanadium compounds, molybdenum compounds and tungsten compounds.

4,212,853

METHOD FOR THE TREATMENT OF EXHAUST GASES CONTAINING NITROGEN OXIDES

Suguru Fukui, Tokyo, Japan, assignor to Chiyoda Kako Kensetsu Kabushiki Kaisha, Yokohama, Japan

Continuation-in-part of Ser. No. 780,406, Mar. 23, 1977, which is a continuation-in-part of Ser. No. 663,198, Mar. 2, 1976, abandoned, which is a continuation of Ser. No. 504,110, Sep. 9, 1974, abandoned. This application Dec. 27, 1978, Ser. No. 973,702

Claims priority, application Japan, Sep. 7, 1973, 48/100318

Int. Cl.² B01D *53/34*

U.S. Cl. 423—235 **12 Claims**

1. A method of treating exhaust gas containing nitrogen oxides, comprising the steps of forming a neutral aqueous solution containing urea and a catalyst for the removal of said nitrogen oxides from said exhaust gas, said catalyst being a catalytic amount of at least one halogen ion selected from the group consisting of bromine and chlorine ions, and contacting said neutral aqueous solution with exhaust gas containing nitrogen oxides, said process being carried out at a temperature of between about ambient temperature and the boiling point of the solution.

4,212,854

METHOD FOR PURIFICATION OF AIR CONTAINING CARBON MONOXIDE

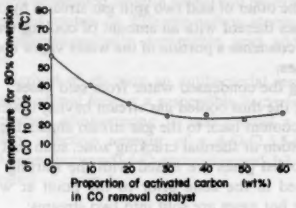
Masao Maki, Nabari; Seiichi Sano, Nara; Kunihiro Tsuruda, Yamatokoriyama, and Ikuo Kobayashi, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 17, 1978, Ser. No. 887,678

Claims priority, application Japan, Mar. 18, 1977, 52/30790; Dec. 29, 1977, 52/157713

Int. Cl.² B01D *53/34*

U.S. Cl. 423—247 **13 Claims**



1. Method for the oxidation of carbon monoxide in admixture with air which comprising contacting carbon monoxide in admixture with air with a catalyst comprising a carrier in the form of a hard substance including powdered activated carbon, an alkali, and a cement and said carrier being impregnated with palladium alone or in combination with one or more elements selected from the group consisting of ruthenium, rhodium, platinum whereby carbon monoxide in said air is oxidized to carbon dioxide.

4,212,855

PROCESS FOR PRODUCING CONCENTRATED SULFURIC ACID

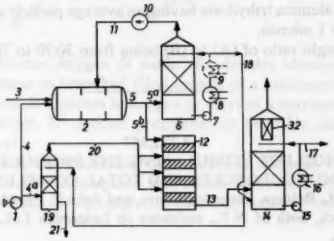
Walter Kerner, Huerth-Hermuehlheim, and Paul Schmitz, Noervenich-Dorweiler, both of Fed. Rep. of Germany, assignors to Davy Powergas GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 912,644

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725432

Int. Cl.² C01B *17/72, 17/50*

U.S. Cl. 423—522 **10 Claims**



1. In a process for producing concentrated sulfuric acid from hot starting H_2O- and SO_2-containing gases having an H_2O/-SO_2 molar ratio above 1.25, the gases being formed by the combustion of H_2S-containing gases or by the thermal cracking of aqueous waste sulfuric acid in a combustion or thermal cracking zone, and the process comprising:

cooling the hot starting gases to a temperature of from 400° to 480° C. and lowering their water content;

oxidizing the SO_2 in the gases to SO_3 in a plurality of contact stages, including a first stage, a last stage and at least one intermediate stage;

cooling the gases between the contact stages; and

absorbing the sulfur trioxide and water vapor to form sulfuric acid;

the improvement which comprises effecting the cooling of the hot starting gases produced in the combustion or thermal cracking zone and the lowering of the water content thereof by:

splitting the H_2O- and SO_2-containing gas stream emanating from the combustion or thermal cracking zone into two gas streams;

feeding one of said two split gas streams into the first contact stage;

cooling the other of said two split gas streams by contacting the gases thereof with an amount of cooling water effective to condense a portion of the water vapor contained in the gases;

separating the condensed water from said gases;

recycling the thus cooled gas stream having lowered water vapor content back to the gas stream emanating from the combustion or thermal cracking zone, such that the recycled cooled gases are mixed with the starting hot gases produced in the zone prior to the point at which said starting hot gases are split into two streams;

the portion of the water vapor condensed in the cooling step and the proportion of gases split into said two split streams being such that the H_2O/SO_2 molar ratio and the temperature of the gases fed into the first contact stage are 1.0 to 1.25 and 400°–480° C., respectively.

4,212,856

TOOTHPASTE

Ronald Hoyles, Epsom Downs, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,727

Claims priority, application United Kingdom, Dec. 7, 1977, 50945/77

Int. Cl.[2] A61K *7/16, 7/18*

U.S. Cl. 424—52 **5 Claims**

1. An anti-caries toothpaste containing sodium monofluorophosphate and alumina trihydrate abrasive, wherein the abrasive imparts to the toothpaste a dentine abrasion value of 30 to 60 units and consists of a mixture of

(A) an alumina trihydrate having an average particle size of from 5 to 13 microns; and

(B) an alumina trihydrate having an average particle size of less than 1 micron,

the weight ratio of (A) to (B) being from 30:70 to 70:30.

4,212,857

METHOD FOR STIMULATING THE PRODUCTION OF IMMUNOGLOBULIN AND TOTAL COMPLEMENT

Leslie L. Balassa, Blooming Grove, and John F. Prudden, Upper Nyack, both of N.Y., assignors to Lescarden Ltd., Goshen, N.Y.

Filed Oct. 29, 1976, Ser. No. 736,770

Int. Cl.[2] A61K *35/12*

U.S. Cl. 424—95 **7 Claims**

1. The method of stimulating the production of increased titers of immunoglobulin and total complement which comprises administering to a patient in need of such treatment an effective amount for stimulating immunoglobulin and total complement of an aqueous solution consisting essentially of at least the aqueous soluble portion of defatted and essentially pure granulated cartilage material substantially free from adhering tissue, said cartilage being derived from a cartilage bearing animal or fish.

4,212,858

ANTIBIOTIC ACULEACIN-Aα, -Aγ, -Dα AND -Dγ AND METHODS FOR THEIR PRODUCTION

Masaru Otani; Shuzo Satoi, and Masaki Takada, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 19, 1978, Ser. No. 897,919

Claims priority, application Japan, Apr. 19, 1977, 52-46078; Apr. 19, 1977, 52-46079; Apr. 19, 1977, 52-46080; Apr. 19, 1977, 52-46081

Int. Cl.[2] A61K *35/70*; C12P *1/02*

U.S. Cl. 424—118 **6 Claims**

1. An antifungal antibiotic aculeacin selected from the group consisting of aculeacin-Aα, aculeacin-Aγ, aculeacin-Dα and aculeacin-Dγ, said aculeacins having substantially the following physico-chemical properties:

Elementary analysis:

	C%	H%	N%
Aculeacin-Aα	56.48	8.60	9.24
Aculeacin-Aγ	54.70	8.23	10.51
Aculeacin-Dα	55.96	8.44	9.96
Aculeacin-Dγ	57.55	8.32	8.94

Sulfur and halogen are not detected.

Molecular weight:

	Rast Method	Amino Acid Analysis*	Gel-filtration Method
Aculeacin-Aα	1015	(860)n	800 ± 110
Aculeacin-Aγ	1021	(860)n	800 ± 110
Aculeacin-Dα	1243	(555)n	850 ± 100
Aculeacin-Dγ	1265	(555)n	850 ± 100

*Calculated from detected amount of threonine

Melting point:

Aculeacin-Aα: 174°–177° C.

Aculeacin-Aγ: 172°–175° C.

Aculeacin-Dα: 159°–162° C.

Aculeacin-Dγ: 159°–162° C.

Specific rotation: $[\alpha]_D^{23}$ (c-0.25 methanol)

Aculeacin-Aα: −46.8°

Aculeacin-Aγ: −47.4°

Aculeacin-Dα: −45.7°

Aculeacin-Dγ: −46.7°

Ultraviolet absorption spectrum:

Aculeacin-Aα in methanol (32.4 γ/ml) as shown in FIG. 1 in the accompanying drawings

Aculeacin-Aγ in methanol (32.4 γ/ml) as shown in FIG. 4 in the accompanying drawings

Aculeacin-Dγ in methanol (40 γ/ml) as shown in FIG. 7 in the accompanying drawings

Aculeacin-Dα in methanol (40 γ/ml) as shown in FIG. 10 in the accompanying drawings.

6. A process for the production of an antifungal antibiotic aculeacin selected from the group consisting of aculeacin-Aα, aculeacin-Aγ, aculeacin-Dα and aculeacin-Dγ, comprising culturing the microorganism *Aspergillus aculeatus* NRRL 11270 in a nutrient medium containing assimilable carbon and nitrogen sources, and isolating a said aculeacin therefrom.

4,212,859
2'-HYDROXY-2'-DESAMINO-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS, METHODS FOR THEIR MANUFACTURE, METHOD FOR THEIR USE AS ANTIBACTERIAL AGENTS, AND COMPOSITIONS USEFUL THEREFOR

Peter J. L. Daniels, Cedar Grove; Stuart McCombie, West Orange, and Tattanahalli L. Nagabhushan, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 809,839, Jun. 24, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,603

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **20 Claims**

1. A 2'-hydroxy-2'-desamino-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol having an amino function at C-6' selected from the group consisting of

2'-hydroxy-2'-desaminogentamicin C_1,
2'-hydroxy-2'-desaminogentamicin C_{1a},
2'-hydroxy-2'-desaminogentamicin C_2,
2'-hydroxy-2'-desaminogentamicin C_{2a},
2'-hydroxy-2'-desaminogentamicin C_{2b},
2'-hydroxy-2'-desaminosisomicin,
2'-hydroxy-2'-desaminoverdamicin,
2'-hydroxy-2'-desamino-Antibiotic G-52,
2'-hydroxy-2'-desamino-Antibiotic 66-40B,
2'-hydroxy-2'-desamino-Antibiotic 66-40D,
2'-hydroxy-2'-desamino-Antibiotic JI-20B,
2'-hydroxy-2'-desaminotobramycin; and
2'-hydroxy-2'-desamino-3',4'-dideoxykanamycin B;
the 5-deoxy-, 5-epi-, 5-epi-azido-5-deoxy derivatives thereof;
2'-hydroxy-2'-desamino-Antibiotic Mu-1 and
2'-hydroxy-2'-desamino-Antibiotic Mu-4;
the 1-N-(ω-amino-α-hydroxyalkanoyl) derivatives of the foregoing wherein said alkanoyl has from 3 to 5 carbon atoms, and the 1-N-X derivatives of the foregoing wherein X is a substituent selected from the group consisting of alkyl, cycloalkylalkyl, alkenyl, aralkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, aminohydroxyalkyl, and alkylaminohydroxyalkyl, said alkyl substituent having up to 8 carbon atoms, the carbon in said alkyl substituent adjacent to the aminoglycoside nitrogen being unsubstituted, and when said alkyl substituent is substituted by both hydroxl and amino functions, only one of said functions can be attached at any one carbon atom; and the pharmaceutically acceptable acid addition salts thereof.

10. The method of eliciting an antibacterial response in a warm-blooded animal having a susceptible bacterial infection which comprises administering to said animal a non-toxic, antibacterially effective amount of a 2'-hydroxy-2'-desamino-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol of claim **1**.

4,212,860
4-O-(2,3,5-TRIDEOXY-5-AMINO-α-D-PENTOFURANOSYL)-6-O-AMINOGLYCOSYL-1,3-DIAMINOCYCLITOIS, METHODS FOR THEIR PREPARATION, PHARMACEUTICAL FORMULATIONS THEREOF AND THEIR USE AS ANTIBACTERIAL AGENTS

Stuart McCombie, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 922,605, Jul. 7, 1978, abandoned. This application Nov. 8, 1978, Ser. No. 959,032

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **14 Claims**

1. A 4-O-(2,3,5-trideoxy-5-amino-α-D-pentofuranosyl)-6-O-aminoglycosyl-1,3-diaminocyclitol wherein said 6-O-aminoglycosyl is a member selected from the group consisting of garosaminyl, 3-desmethylgarosaminyl, 4-desmethylgarosaminyl, 4-desmethyl-4-epigarosaminyl, 3,4-bisdesmethylgarosaminyl, and 3,4-bisdesmethyl-4-epigarosaminyl, and wherein said 1,3-diaminocyclitol is 2-deoxystreptamine or a 5-epi-, 5-deoxy-, 5-fluoro-5-deoxy-, 5-epi-fluoro-5-deoxy-, 5-epi-azido-5-deoxy-, or a 5-epi-amino-5-deoxy- derivative thereof;

and the 1-N-substituted derivatives thereof wherein said substituent is $-CH_2X$ or

wherein X is a member selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl, aminoalkyl, N-alkylaminoalkyl, aminohydroxyalkyl, N-alkylaminohydroxyalkyl, phenyl, benzyl, and tolyl, said substituent having up to 8 carbon atoms, and when substituted by both amino and hydroxyl groups, bearing said groups on different carbon atoms;

and the pharmaceutically acceptable acid addition salts thereof.

13. The method of eliciting an antibacterial response in a warm-blooded animal having a susceptible bacterial infection which comprises administering to said animal a non-toxic, antibacterially effective amount of a 4-O-(2,3,5-trideoxy-5-amino-α-D-pentofuranosyl)-6-O-aminoglycosyl-1,3-diaminocyclitol of claim **1**.

4,212,861
ISOXAZOLE-5-ALKYL DITHIOPHOSPHORIC ACID DERIVATIVES

Hans Theobald, Limburgerhof; Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

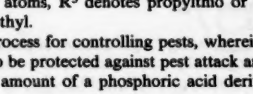
Continuation-in-part of Ser. No. 732,205, Oct. 14, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,297

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2549961

Int. Cl.[2] C07D *261/10;* **A01N** *9/36*

U.S. Cl. 424—200 **12 Claims**

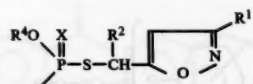
1. Phosphoric acid derivative of the formula



I,

where X denotes oxygen or sulfur, R^1 denotes identical or different, linear or branched alkyl groups of a maximum of 6 carbon atoms, R^2 denotes hydrogen or alkyl of a maximum of 3 carbon atoms, R^3 denotes propylthio or butylthio and R^4 denotes ethyl.

9. A process for controlling pests, wherein the pests or the objects to be protected against pest attack are treated with an effective amount of a phosphoric acid derivative of the formula I



I,

where X denotes oxygen or sulfur, R^1 denotes identical or different, linear or branched alkyl groups of a maximum of 6 carbon atoms, R^2 denotes hydrogen or alkyl of a maximum of 3 carbon atoms, R^3 denotes propylthio or butylthio and R^4 denotes ethyl.

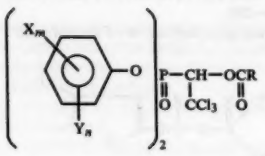
4,212,862

O,O-DIARYL-1-ACYLOXY-2,2,2-TRICHLOROETHYL-PHOSPHONATES AND FUNGICIDES BASED THEREON

Nikolai K. Bliznjuk, Molodogvardeiskaya ulitsa, 36, korpus 6, kv. 62, Moscow; Ljudmila D. Protasova, Odintsovsky raion, p/o B.Vyazemy, 7, kv. 37, Moskovskaya oblast; Tatyana A. Klimova, Odintsovsky raion, Djutkovo, 5, kv. 65, Moskovskaya oblast; Rimma S. Klopkova, Odintsovsky raion, p/o B.Vyazemy, 16, kv. 20, Moskovskaya oblast; Vasily D. Tkachev, Odintsovsky raion, p/o B.Vyazemy, 8, kv. 4, Moskovskaya oblast; Evgeny F. Granin, ulitsa Oktyabrskaya, 91, kv. 42, Krasnodar; Mikhail P. Umnov, Kutuzovsky prospekt, 5, kv. 334, Moscow; Rev V. Streltsov, Odintsovsky raion, p/o B.Vyazemy, 3, kv. 54; Oleg V. Klimov, Odintsovsky raion, p/o B.Vyazemy, 7, kv. 37, both of Moskovskaya oblast; Sergei G. Zhemchuzhin, ulitsa Dnepropetrovskaya, 23, kv. 66; Rudolf P. Bulankin, ulitsa Menzhinskogo, 28, korpus 3, kv. 196, both of Moscow; Valery P. Chernyshev, Schelkovo, ulitsa Kosmodemyanskol, 15, korpus 1, kv. 35, Moskovskaya oblast; Fialka G. Safina, ulitsa Komarova, 13-b, kv. 1, Moskovskaya oblast; Alla I. Terekhova, Schelkovo, ulitsa Sirenevaya, 6/1, kv. 80, Moskovskaya oblast; Eleonora I. Zaikina, Schelkovo, ulitsa Sirenevaya, 6/1, kv. 23, Moskovskaya oblast; Alexandr N. Bliznjuk, Molodogvardeiskaya ulitsa, 36, korpus 6, kv. 62; Valentina A. Russakova, ulitsa Valtera Ulbrikhta, 20, kv. 20, both of Moscow; Julia N. Ivanchenko, Odintsovsky raion, p/o B.Vyazemy, 8, kv. 12, Moskovskaya oblast; Natalya S. Svistunova, Odintsovsky raion, p/o B.Vyazemy, 8, kv. 16, Moskovskya oblast; Viktor K. Promonenkov, Veshnyakovskaya ulitsa, 31, kv. 307, Moscow, all of U.S.S.R.; Lev N. Chudov, deceased, late of Moskovskaya oblast, U.S.S.R.; by Ljudmila A. Chudova, administrator, poselok Zagoryanskaya, ulitsa Dostoevskogo, 13, and by Vladimir L. Chudov, administrator, Schelkovo, ulitsa Pustovskaya, 4, kv. 32, both of Moskovskaya oblast, U.S.S.R.

Filed Oct. 23, 1978, Ser. No. 953,451
Int. Cl.[2] A01N 9/36; C07F 9/40
U.S. Cl. 424—212 7 Claims

1. O,O-diaryl-1-acyloxy-2,2,2-trichloroethylphosphonates of the formula:



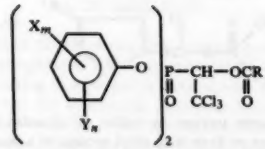
wherein

R is a C_1-C_8-alkyl, phenyl;

X and Y the same or different are each hydrogen, a C_1-C_8-alkyl, phenyl, a halide, or X and Y together form a fragment of a benzene ring;

m and n=1 to 2.

5. A method of suppressing fungal diseases of plants involving the use of a fungicidally active amount of a composition containing, as the active principle, a O,O-diaryl-1-acyloxy-2,2,2-trichloroethylphosphonate of the formula:



wherein R is a C_1-C_8 alkyl, phenyl; X and Y the same or different are each hydrogen, a C_1-C_8 alkyl, phenyl, a halogen, or X and Y together form a fragment of a benzene ring; m and n=1-2, and a carrier therefor.

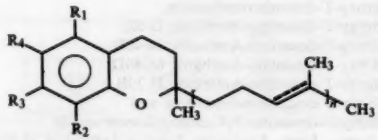
4,212,863

HIGHLY CONCENTRATED PHARMACEUTICAL FORMULATIONS OF STEROIDS AND PROCESSES FOR THEIR PREPARATION

Lammert Cornelius, Boxmeer, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Oct. 23, 1978, Ser. No. 953,877
Claims priority, application Netherlands, Oct. 29, 1977, 7711916
Int. Cl.[2] A61K 31/56
U.S. Cl. 424—240 10 Claims

1. A highly concentrated liquid pharmaceutical steroid formulation comprising (1) at least one steroid of the oestrane, androstane or (19-nor-)pregnane series containing at least a 3-oxo-Δ^4-group and an hydroxy group at position 17 and or 21 (if present) and (2) a solvent for said steroid comprising at least one of tocol or a derivative thereof that is fluid at normal temperatures and of the formula:



where

R_1=H, CH_3, or C_2H_5;

R_2=H, CH_3, or C_2H_5;

R_3=H, CH_3, or C_2H_5;

R_4=H, OH, O-C_{1-2} acyl, OCH_3, or C_2H_5; and

n=1, 2, or 3;

the dotted lines indicate the optional presence of a carbon atom double bond, with the proviso that said tocol or derivative constitutes at least 10% by weight of said formulation.

4,212,864

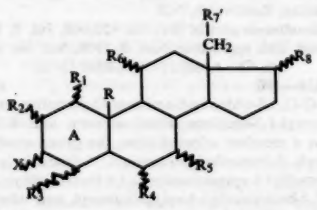
BRANCHED CHAIN AND CYCLOALIPHATIC ESTERS OF THE ANDROSTANE AND OESTRANE SERIES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Lambert J. W. M. Tax, Macharen, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Nov. 17, 1977, Ser. No. 852,326
Claims priority, application Netherlands, Nov. 26, 1976, 7613248
Int. Cl.[2] C07J 1/00, 43/00
U.S. Cl. 424—243 20 Claims

18. A pharmaceutical composition adapted for oral administration comprising:

(A) a pharmaceutically effective amount of a compound of the formula:

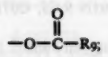


R_1 is selected from the group consisting of H and CH_3;

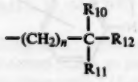
R_2 is selected from the group consisting of H and CH_3;
R_3 is selected from the group consisting of H, OH, CH_3 and Cl;
R_4 is selected from the group consisting of H and C_1 to C_4 alkyl;
R_5 is selected from the group consisting of H, C_1 to C_4 alkyl and CF_3;
R_6 is selected from the group consisting of H, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halogen and β-OH, with the proviso that when R_6 is β-OH, the compound also contains 9α-F; with the further proviso that R_1, R_2, R_3, R_4, R_5, and R_6 represent at least 4 and at most 5 hydrogen atoms
R_7 is H or CH_3;
R_8 is

with the proviso that R_8 is OH or

when the compound has an aromatic A-ring and the 3-position is substituted by



R_9 is



n=0, 1 or 2;
R_{10} is C_1 to C_{10} alkyl;
R_{11} is selected from the group consisting of H and C_1 to C_{10} alkyl;
R_{12} is an aliphatic group having 1 to 18 carbon atoms, or R_{10} and R_{12} taken together with the carbon atom to which they are attached form a C_7 to C_{12} cycloaliphatic group with the proviso that the total number of carbon atoms in the carboxylic acid residue is 8 to 20;
ring A has one of the following types of unsaturation; Δ^1; $\Delta^{5(10)}$; $\Delta^{1,4}$; $\Delta^{1,3,5(10)}$; and $\Delta^{5(10)}$; $\Delta^{1,3,5(10)}$;
X is selected from the group consisting of =O and

providing that X is

when the compound has an aromatic ring A; and
(B) a pharmaceutically effective carrier therefor.

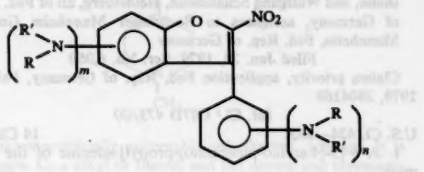
4,212,865

AMINE DERIVATIVES OF 2-NITRO-3-PHENYLBENZOFURAN

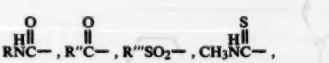
Robert A. Scherrer, White Bear Lake; Richard M. Stern, Cottage Grove, both of Minn., and Vernon R. Fletcher, Davis, Calif., assignors to Riker Laboratories, Inc., Northridge, Calif.

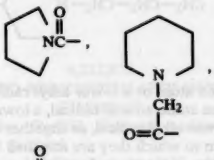
Filed Dec. 26, 1978, Ser. No. 973,153
Int. Cl.[2] A01N 9/20; C07D 307/82
U.S. Cl. 424—250 **24 Claims**

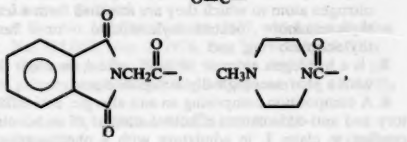
1. A compound of the formula

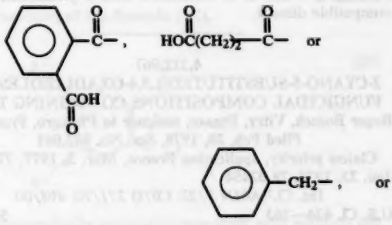


wherein
m and n are zero or one and the sum of m and n is one,
R is hydrogen or lower alkyl,
R' is R,

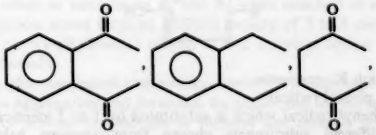








R and R' together form $(CH_3)_2N—N=$,



or complete a pyrrole or pyrrolidine ring through the nitrogen atom to which they are bonded,
R'' is R, lower alkoxy, CF_3— or $ClCH_2$— and

R''' is lower alkyl or CF_3—, and pharmaceutically acceptable salts thereof.

24. A method for inhibiting or arresting the growth of bacteria comprising contacting said bacteria with a compound according to claim 1 in an amount sufficient to inhibit the growth of said bacteria.

4,212,866

PHARMACEUTICALLY ACTIVE DERIVATIVES OF 9-[3-(4-AMINO-PIPERIDINO)-PROPYL]-ADENINES

Walter-Gunar Friebe, Darmstadt; Max Thiel, Mannheim; Androniki Roesch, Mannheim; Otto-Henning Wilhelms, Heddesheim, and Wolfgang Schaumann, Heidelberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

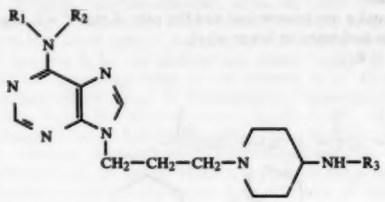
Filed Jan. 24, 1979, Ser. No. 6,050

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804168

Int. Cl.[2] C07D *473/00*

U.S. Cl. 424—253 **14 Claims**

1. A 9-[3-(4-amino-piperidino)-propyl]-adenine of the formula



wherein

R_1 is a hydrogen atom or a lower alkyl radical,

R_2 is a hydrogen atom, an aryl radical, a lower alkyl radical, a hydroxy lower alkyl radical, or together with R_1 and the nitrogen atom to which they are attached form a tetramethyleneimino, pentamethyleneimino or hexamethyleneimino ring, and

R_3 is a hydrogen atom or an acyl radical, or a salt thereof with a pharmacologically acceptable acid.

8. A composition comprising an anti-allergic, anti-inflammatory and anti-oedematous effective amount of an adenine according to claim 1, in admixture with a pharmacologically compatible diluent.

4,212,867

2-CYANO-5-SUBSTITUTED 1,3,4-OXADIAZOLES AND FUNGICIDAL COMPOSITIONS CONTAINING THEM

Roger Boesch, Vitry, France, assignor to Philagro, France

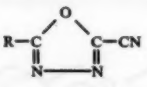
Filed Feb. 28, 1978, Ser. No. 882,061

Claims priority, application France, Mar. 3, 1977, 77 06875; Jan. 23, 1978, 78 02454

Int. Cl.[2] A01N *9/22*; C07D *271/10, 498/00*

U.S. Cl. 424—263 **5 Claims**

1. A compound of the formula



in which R represents:

the phenyl radical;

a phenyl radical which is substituted by 1 to 3 identical or different substituents chosen from amongst halogen atoms, the nitro radical, the cyano radical, alkyl radicals containing from 1 to 4 carbon atoms, alkoxy radicals, the alkyl part of which contains from 1 to 4 carbon atoms, alkylsulphonyl radicals, the alkyl part of which contains from 1 to 4 carbon atoms, alkylthio radicals containing 1 to 4 carbon atoms, dialkylamino radicals, of which each of the identical or different alkyl parts contains from 1 to 4 carbon atoms, the carbamoyloxy radical which is optionally substituted by 1 to 2 alkyl radicals containing from 1 to 4 carbon atoms, or the trifluoromethyl radical;

a phenyl radical which is substituted by a divalent alkylenedioxy radical in which the alkylene part contains from 1 to 4 carbon atoms;

a naphthyl radical or;

a pyridyl radical optionally substituted by 1 to 2 identical or different substituents chosen from amongst halogen atoms, and alkoxy radicals containing from 1 to 4 carbon atoms.

2. Process for combating fungal diseases in plants, which comprises applying a fungicidally effective amount of a compound defined in claim 1 to said plants.

4,212,868

CERTAIN FUNGICIDAL PYRIDINECARBALDEHYDE PHENYLHYDRAZONES

Michael T. Clark, Sittingbourne, and Pieter ten Haken, Herne Bay, both of England, assignors to Shell Oil Company, Houston, Tex.

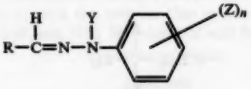
Continuation-in-part of Ser. No. 838,772, Oct. 3, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,650

Claims priority, application United Kingdom, Oct. 5, 1976, 41300/76

Int. Cl.[2] A01N *9/22*; C07D *213/90*

U.S. Cl. 424—263 **1 Claim**

1. A method for killing unwanted fungi which comprises applying to such fungi a fungicidal amount of a compound, being one of four having the formula:



(I)

the four being individual species wherein the substituent moieties are as follows, the number preceding the moiety, Z, indicating the position of that moiety in the phenyl ring:

R	Y	n	Z
3-pyridyl	H	1	4-chloro
2-pyridyl	H	1	4-chloro
3-pyridyl	H	0	—
3-pyridyl	—CHO	0	—

4,212,869

SUBSTITUTED 1-PYRIDINYLOXY-1-(IMIDAZOLYL)-2-BUTANONE COMPOUNDS AND THEIR USE AS FUNGICIDES

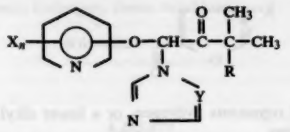
Chrislyn M. Carson; Robert J. Ehr, both of Pittsburg, and Richard B. Rogers, Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 956,957, Nov. 2, 1978. This application Mar. 22, 1979, Ser. No. 22,761

Int. Cl.[2] A61K *31/415*; C07D *401/02*

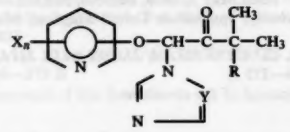
U.S. Cl. 424—263 **15 Claims**

1. A substituted 1-pyridinyloxy-1-(imidazolyl)-2-butanone compound corresponding to the formula



wherein X independently represents halogen, methyl, trichloromethyl, trifluoromethyl, or cyano; n represents an integer of 0 to 3; Y represents —CH; and R represents methyl, methoxy, or ethoxy.

4. A fungicidal composition comprising as active ingredient a fungicidally effective amount of a substituted 1-pyridinyloxy-1-(imidazolyl)-2-butanone compound corresponding to the formula



wherein X independently represents halogen, methyl, trichloromethyl, trifluoromethyl, or cyano; n represents an integer of 0 to 3; Y represents —CH; and R represents methyl, methoxy, or ethoxy, in intimate admixture with an inert carrier therefor.

4,212,870

1-(2,6-DICHLOROBENZOYL)-3-(5-CHLORO-2-PYRIDINYL-N-OXIDE)UREA AND USE AS INSECTICIDE

Charles G. Gibbs, Shawnee Mission, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 18, 1979, Ser. No. 49,381

Int. Cl.[2] A61K *31/44*; C07D *213/75*

U.S. Cl. 424—263 **5 Claims**

1. The method of killing insect pests on plants which comprises applying to the infested plants an insecticidally effective amount of 1-(2,6-dichlorobenzoyl)-3-(5-chloro-2-pyridinyl-N-oxide)urea.

4,212,871

APPETITE STIMULATING AND ANTIHISTAMINIC 3-HYDROXYMETHYLCYPROHEPTADINE AND ANALOGS

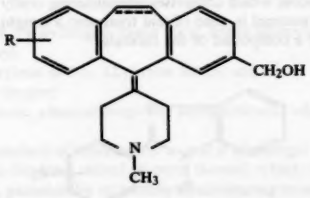
John D. Prugh, Chalfont, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 2, 1979, Ser. No. 16,771

Int. Cl.[2] A61K *31/445*; C07D *211/70*

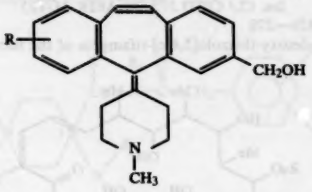
U.S. Cl. 424—267 **8 Claims**

5. A method of producing appetite stimulation comprising the administration to a patient in need of such treatment of an appetite stimulating amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen, C_{1-3} alkyl or fluoro, and the dotted line represents saturation or unsaturation.

7. A method of producing an antihistaminic effect comprising the administration to a patient in need of such treatment of an antihistaminic amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen, C_{1-3} alkyl or fluoro, and the dotted line represents saturation or unsaturation.

4,212,872

2-SUBSTITUTED BENZISOTHIAZOLONES AND USE THEREOF

Keith H. Baggaley, Redhill, England, assignor to Beecham Group Limited, England

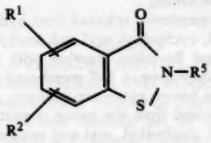
Division of Ser. No. 850,786, Nov. 11, 1977, which is a division of Ser. No. 738,000, Nov. 2, 1976, Pat. No. 4,113,728. This application Aug. 25, 1978, Ser. No. 936,861

Claims priority, application United Kingdom, Nov. 18, 1975, 47373/75

Int. Cl.[2] C07D *417/04*; A61K *31/425*

U.S. Cl. 424—270 **8 Claims**

1. A compound of the formula (III),



(III)

or a pharmaceutically acceptable non-toxic acid addition salt thereof when there is a basic nitrogen in the molecule wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen, or R^1 and R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or oxy-alkyleneoxy moiety of 1 to 3 carbon atoms; and R^5 is thiazolyl.

5. A pharmaceutical composition useful for the inhibition of platelet aggregation and thrombus formation and for the treatment of arterial thromboses in humans and animals which comprises a platelet-aggregation-inhibitory amount, an amount sufficient to inhibit the formation of thrombs or an anti-arterial thrombotically effective amount of a compound according to claim 1 in combination with a pharmaceutically acceptable carrier.

4,212,873

4-DESOXY-THIAZOLO[5,4-c]RIFAMYCIN DERIVATIVES AND THEIR USE AS ANTIMICROBIAL AGENTS

Renato Cricchio, Varese, and Marisa Berti, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

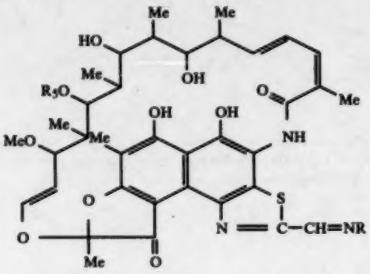
Filed Mar. 19, 1979, Ser. No. 21,866

Claims priority, application Italy, Apr. 27, 1978, 22738 A/78

Int. Cl.[2] C07D *515/20;* A61K *31/425*

U.S. Cl. 424—270 **7 Claims**

1. A 4-desoxy-thiazolo[5,4-c]-rifamycin of the formula



wherein R stands for a group $-OR_1$, $-NR_2R_3$ or

wherein R_1 represents alkyl having 1 to 8 carbon atoms per group and no substitution or halo, amino, mono- or di- (C_{1-4}) alkylamino, C_{1-4} alkoxy, C_{5-8} cycloalkoxy, phenoxy phenyl (C_{1-4}) alkoxy, nitro, cyano, hydroxy, carboxy, carbo (C_{1-4}) alkoxy or carbamoyl substitution; alkenyl having up to 8 carbon atoms per group which contains one or two double bonds, alkynyl having up to 8 carbon atoms per group which contains one or two triple bonds, cycloalkyl having a cycloaliphatic ring containing from 5 to 8 carbon atoms and having up to two C_{1-4} alkyl substituents, aryl or aralkyl wherein aryl as such or in a compound term designates phenyl or phenyl having halo, C_{1-4} alkyl, halo (C_{1-4}) alkyl, C_{1-4} alkenyl, C_{5-8} cycloalkyl, amino, mono- or di- (C_{1-4}) alkylamino, C_{1-4} alkoxy, methylenedioxy, cyano, carboxy, hydroxy, carbo (C_{1-4}) alkoxy, carbamoyl or nitro substitution,

R_2 and R_3 are independently selected from hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl and aralkyl, as defined above, or R_2 and R_3 taken together with the adjacent nitrogen atom may form a 5–7 membered heterocyclic ring wherein the hetero atoms are nitrogen, and

R_4 is a radical selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, aryl and aralkyl, as defined above and; R_5 is hydrogen or acetyl.

7. Method which comprises contacting a susceptible microbe with an effective antimicrobial amount of a compound as claimed in claim 1.

4,212,874

GLYOXAL-2-OXIM DERIVATIVES AND A PROCESS FOR RELIEVING PAIN/OR INFLAMMATION THEREWITH

Takaji Honna; Motoaki Tanaka; Syozo Yamada, and Hidekazu Miyake, all of Tokushima, Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan

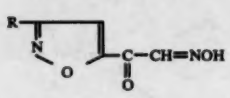
Filed Mar. 2, 1979, Ser. No. 16,821

Claims priority, application Japan, Mar. 9, 1978, 53-27300

Int. Cl.[2] C07D *261/08;* A61K *31/42*

U.S. Cl. 424—272 **5 Claims**

1. A glyoxal-2-oxim derivative represented by the formula,



[I]

wherein R represents hydrogen, or a lower alkyl of C_{1-4} or phenyl group.

4. Method of relieving pain and/or inflammation in a patient in need of such relief, said method comprising administering an effective amount of a compound of claim 1.

4,212,875

IMIDAZOLYL ALKYL BISAMIDINES

Graham J. Durant, Welwyn Garden City, and Peter D. Miles, Hitchin, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

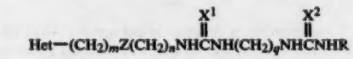
Filed May 2, 1978, Ser. No. 902,145

Claims priority, application United Kingdom, May 5, 1977, 18881/77

Int. Cl.[2] C07D *233/64, 233/66;* A61K *31/415*

U.S. Cl. 424—273 R **16 Claims**

1. A compound of the structure



in which

Het is imidazole which is attached at a ring carbon and which is optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen or lower alkoxy;

Z is sulphur or methylene;

m is 0, 1 or 2, n is 2 or 3, and m+n is 3 or 4;

R is hydrogen or lower alkyl;

each of X^1 and X^2 is sulphur, a nitromethylene group $CHNO_2$, or an imino group NY, where Y is hydrogen, hydroxy, lower alkyl, cyano or carbamoyl $CONH_2$; and

q is from 2 to 12; in the form of the free base or its pharmaceutically-acceptable acid addition salts.

16. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

4,212,876

SUBSTITUTED OR UNSUBSTITUTED 2-PHENYLBENZIMIDAZOLES AS ANTI-OBESITY AGENTS

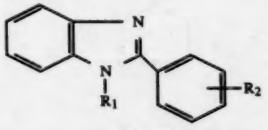
William J. Houlihan, Mt. Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 874,467, Feb. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 810,917, Jun. 29, 1977, abandoned. This application Jun. 21, 1978, Ser. No. 917,413

Int. Cl.[2] A61K *31/415*

U.S. Cl. 424—273 B **7 Claims**

1. A method for treating obesity by preventing the absorption of glucose which comprises administering orally or parentally to a mammal in need of said treatment a weight reducing amount of a compound of the formula



wherein

R_1 represents lower alkyl having 1 to 4 carbon atoms, and R_2 represents hydrogen, fluoro or chloro.

4,212,877

1-ARYLOXY-2-HYDROXY-3-[(BENZIMIDAZOLIN-ONE-SUBSTITUTED ALKYL)-AMINO]-PROPANES AND SALTS THEREOF

Herbert Köppe, Ingelheim am Rhein; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth; Kurt Schromm, both of Ingelheim am Rhein; Wolfgang Hoefke, Budenheim, and Gojko Muacevic, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

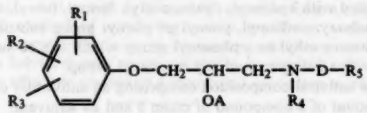
Continuation-in-part of Ser. No. 838,450, Oct. 3, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,280

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644833

Int. Cl.² A61K *31/415;* C07D *235/26*

U.S. Cl. 424—273 B 7 Claims

1. A compound of the formula



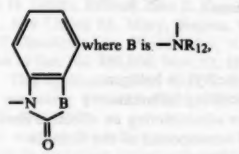
wherein R_1 is hydrogen; halogen; trifluoromethyl; nitro; alkyl of 1 to 8 carbon atoms; alkoxy of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 8 carbon atoms; alkenyl of 2 to 5 carbon atoms; alkynyl of 2 to 5 carbon atoms; alkenyloxy of 3 to 6 carbon atoms; alkynyloxy of 3 to 6 carbon atoms; $-(CH_2)_x-A'$ where x is 1, 2 or 3 and A' is cyano, amino, carboxamido or hydroxyl; or $-CH_2-SO_2-CH_3$;

R_2 is hydrogen; halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; aralkoxy of 7 to 14 carbon atoms; alkenyl of 2 to 4 carbon atoms; nitro; or, together with R_3, $-CH=CH-CH=CH-$, which is attached to carbon atoms of the phenyl ring in the ortho position with respect to each other;

R_3 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; or benzyloxy;

R_4 is hydrogen; alkyl of 1 to 5 carbon atoms; or aralkyl of 7 to 14 carbon atoms;

R_5 is



where R_{12} is hydrogen, lower alkyl, lower alkenyl, or lower alkynyl;

D is alkylene of 1 to 12 carbon atoms; and

A is hydrogen;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of blocking the α- and β-adrenergic receptors in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective amount of a compound of claim 1.

4,212,878

PHENYLACETAMIDE DERIVATIVE ANALGESICS

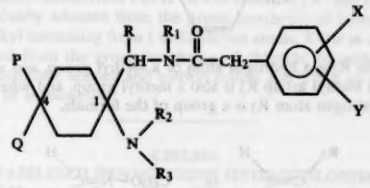
Daniel Lednicer, Evansville, Ind., and Jacob Szmuszkovicz, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 26, 1978, Ser. No. 872,632

Int. Cl.² C07D *405/04;* A61K *31/40;* C07D *207/04*

U.S. Cl. 424—274 18 Claims

1. A compound of the formula



wherein

R is hydrogen or C_1 to C_3-alkyl;

R_1 is hydrogen or C_1 to C_3-alkyl;

each of R_2 and R_3 is independently a C_1 to C_6-alkyl, or R_2 is a C_3 to C_5-(allylic)alkenyl when R_3 is a C_1 to C_6-alkyl, or R_2 and R_3, taken together with the nitrogen to which they are bonded complete a mono-nitrogen heterocyclic ring having 3 to 4 carbon atoms;

Q and P, taken together, represent an oxo group (O=) or a C_2 to C_3-alkylenedioxy group; taken separately, when P or Q is hydroxy, then the other of P or Q is hydrogen, C_1 to C_3-alkyl or phenyl-(C_1 to C_2)alkyl;

each of X and Y is selected from the group consisting of hydrogen, C_1 to C_3-alkyl, C_1 to C_3-alkyloxy, a halogen having an atomic number of from 9 to 35, nitro, trifluoromethyl and azido, providing that when X is halogen, Y is C_1 to C_3-alkyl, C_1 to C_3-alkyloxy or halogen, and that when X is nitro, trifluoromethyl or azido, Y is hydrogen, and the pharmacologically acceptable salts thereof.

13. A composition useful in pharmaceutical dosage unit form for alleviating pain in warm-blooded mammals which comprises a compound of formula 1 in claim 1 in combination with a pharmaceutically acceptable carrier.

4,212,879

BENZYL PYRROLYL METHYL CARBOXYLATE INSECTICIDES AND ACARICIDES

Tadashi Ohsumi, Kyoto; Nobushige Itaya, Nishinomiya, and Masachika Hirano, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

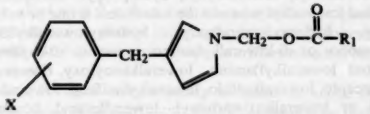
Filed Oct. 3, 1978, Ser. No. 948,049

Claims priority, application Japan, Oct. 7, 1977, 52-121244

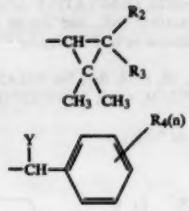
Int. Cl.² A01N *9/22;* C07D *207/32*

U.S. Cl. 424—274 7 Claims

1. A compound of the formula (I),



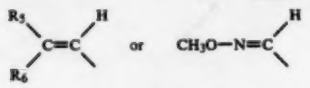
wherein X is a hydrogen atom, or a C_1–C_3 alkyl or a C_1–C_3 alkoxyl group or a halogen atom linked to the meta or para position and R_1 is a group of the formula (II) or (III),



(II)

(III)

wherein R_2 is a hydrogen atom or a methyl group, and when R_2 is a methyl group R_3 is also a methyl group, and when R_2 is a hydrogen atom R_3 is a group of the formula,



wherein R_5 is a halogen atom or a C_1–C_3 alkyl, vinyl or a C_1–C_3 alkoxymethyl group, R_6 is a hydrogen or halogen atom or a methyl group, or taken together, R_5 and R_6 may form a tetramethylene group by connecting together at ends thereof, R_4 is a halogen atom or a lower alkyl, lower alkoxyl or 3,4-methylenedioxy group, n is 1 or 2 and Y is a isopropyl or cyclopropyl group, the esters of the formula (I) including stereoisomers owing to steric configuration of the carboxylic acid and optical isomers owing to the asymmetric carbon of the acid.

7. A method for controlling insects and acarids which comprises applying an insecticidally and acaricidally effective amount of the compound according to claim 1 to insects and acarids.

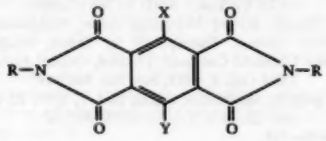
4,212,880

SYMMETRICALLY SUBSTITUTED PYROMELLITIC DIIMIDES AS RUMINANT FEED ADDITIVES

Michael H. Fisher, Bridgewater; Peter Kulsa, Plainfield, and Bruce O. Linn, Bridgewater, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 23, 1978, Ser. No. 954,039
Int. Cl.[2] A61K *31/40*
U.S. Cl. 424—274 **15 Claims**

1. A method for improving the feed efficiency of ruminant animals which comprises orally administering to a ruminant animal an effective amount of a compound having the formula:



wherein each R is the same and represents hydrogen, loweralkyl, loweralkenyl, loweralkynyl, cyclopropyl, nitrophenyl; substituted loweralkyl wherein the substituent is one or two of hydroxy, hydroxyloweralkoxy, hydroxyloweralkylthio, amino, mono- or di-loweralkylamino, mono- or di-(hydroxy substituted loweralkyl)amino, loweralkanoyloxy, loweralkoxy, mercapto, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl or loweralkoxycarbonyl; loweralkanoyl, benzoyl, diloweralkylamino, mono-substituted amino wherein the substituent is loweralkanoyl, benzoyl or loweralkanoyloxy;

X and Y are independently hydrogen, halogen or loweralkyl.

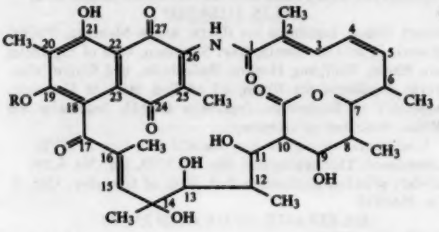
4,212,881

STREPTOVARICIN C DERIVATIVES

Kazuya Sasaki, Higashi Kurume; Hiromi Mitsui, Tokyo, and Kazukiyo Onodera, Nagareyama, all of Japan, assignors to Kaken Chemical Company, Limited, Tokyo, Japan

Filed Jan. 16, 1979, Ser. No. 3,802
Claims priority, application Japan, Feb. 17, 1978, 53-16408
Int. Cl.[2] A61K *31/395*; C07D *491/08*
U.S. Cl. 424—275 **2 Claims**

1. A Streptovaricin C derivative having the formula:



(I)

wherein R represents an allyl, cyclopentyl, cyclohexyl or adamanthyl group or a C_1–C_{20} alkyl group which can be substituted with hydroxyl, cyano, acetyl, formyl, furoyl, thenoyl, methoxy, carbamyl, phenyl or phenyl group substituted with nitro or ethyl or a phenacyl group which can be substituted with a halogen, methoxy or phenyl group.

2. An antiviral composition comprising an antivirally effective amount of a compound of claim 1 and an adjuvant.

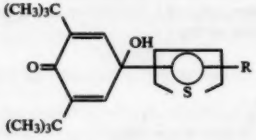
4,212,882

SUBSTITUTED THIOPHENES

George G.I. Moore, Birchwood, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

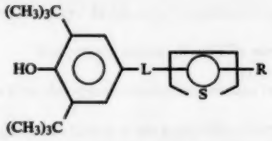
Division of Ser. No. 893,988, Apr. 6, 1978, which is a continuation-in-part of Ser. No. 797,182, May 16, 1977, abandoned. This application Jul. 6, 1979, Ser. No. 55,333
Int. Cl.[2] A01N *9/00*; C07D *333/22*
U.S. Cl. 424—275 **11 Claims**

1. A compound of the formula



wherein R is hydrogen, methyl or halogen.

3. A method for combatting inflammatory processes in a mammal which comprises administering an effective dose less than the toxic amount of a compound of the formula



wherein L is carbonyl or a carbon-carbon bond and R is hydrogen, methyl or halogen.

4,212,883

SULFONIC ACID-N'-METHYLAMIDO-N'-SULFENYL-N-METHYL-CARBAMIC ACID ESTERS

Peter Siegel, Cologne; Engelbert Kühle, Berg. Gladbach; Ingeborg Hammann, Cologne; Bernhard Homeyer, Opladen, and Wolfgang Behrenz, Overath-Steinenbrueck, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

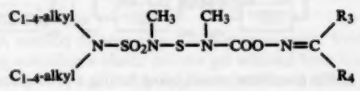
Division of Ser. No. 592,860, Jul. 2, 1975, Pat. No. 4,113,876. This application Apr. 24, 1978, Ser. No. 900,386

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1974, 2434184

Int. Cl.[2] A01N *9/16*; C07D *339/02*

U.S. Cl. 424—277 6 Claims

1. A sulfonic acid-N'-methylamido-N'-sulfenyl-N-methyl-carbamic acid ester of the formula



in which

R^3 and R^4 each independently is cyano, or alkyl, alkoxy, alkylthio or alkoxycarbonyl with 1–4 carbon atoms in each alkyl group, or R^3 and R^4 together form a ring.

5. A method of combating insects acarids or nematodes which comprises applying to the insects, acarids or nematodes or to a habitat thereof an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,212,884

PREVENTION OF PROSTAGLANDIN-INDUCED ENTEROPOOLING WITH PGI'S AND PGD'S

Andre' Robert, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 905,481, May 12, 1978, abandoned. This application Feb. 5, 1979, Ser. No. 9,216

Int. Cl.[2] A61K *31/19*, *31/34*, *31/215*

U.S. Cl. 424—285 6 Claims

1. In a method consisting essentially of administering a diarrheogenic prostaglandin systemically to a mammal for the induction of a prostaglandin-like pharmacological effect, an improvement which comprises:

concommitantly administering an anti-enteropooling dose of a prostacyclin or 11-oxo-prostaglandin.

4,212,885

INSECTICIDAL COMPOSITIONS CONTAINING CERTAIN TETRAORGANOTIN COMPOUNDS AND METHOD FOR USING SAME

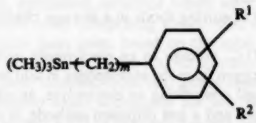
Melvin H. Gitlitz, Edison; John E. Engelhart, Westfield, both of N.J., and Carlos M. Mery, Bogota, Colombia, assignors to M&T Chemicals Inc., Woodbridge, N.J.

Division of Ser. No. 850,856, Nov. 11, 1977, Pat. No. 4,138,483. This application Dec. 6, 1978, Ser. No. 966,947

Int. Cl.[2] A01N *9/00*, *9/36*

U.S. Cl. 424—288 4 Claims

1. A method for killing insects on useful plant crops by applying to said plant crops an insecticidally effective amount of a tetraorganotin compound of the formula



wherein m is 0 or 1, R^1 and R^2 are individually selected from the group consisting of hydrogen, fluorine, chlorine, bromine, iodine, phenyl, $—OR^3$, $—SR^3$, $—NR^4R^5$, $—N^{\oplus}R^4R^5R^6X^{\ominus}$,

$—CO_2H$, $—CO_2^{\ominus}Y^{\oplus}$, $—CO_2R^3$, $—SO_2OR^4$, $—SO_3^{\ominus}Y^{\oplus}$, $—PO(OR^4)OR^5$, $—PO(R^4)R^5$ and C≡N, wherein R is alkyl and contains from 1 to 12 carbon atoms, R^4, R^5 and R^6 are individually selected from the group consisting of hydrogen and alkyl containing from 1 to 12 carbon atoms, $X^{\ominus}$ is an anion selected from the group consisting of chloride, bromide, iodide, bisulfate, acetate and methyl sulfate and $Y^{\oplus}$ is an alkali metal or ammonium.

4,212,886

STABILIZED BENACTYZINE HYDROCHLORIDE

Gerlof Homan, St. Louis, Mo., assignor to Survival Technology, Inc., Bethesda, Md.

Filed Nov. 1, 1978, Ser. No. 956,987

Int. Cl.[2] A61K *31/235*

U.S. Cl. 424—308 10 Claims

1. A pharmaceutical composition comprising a therapeutically effective amount of benactyzine hydrochloride dissolved in a solvent mixture consisting of propylene glycol and water, the propylene glycol being present in an amount of 30 to 50% by volume and sufficient to increase the stability of the benactyzine hydrochloride over that in water alone and the water being present in an amount of 70 to 50% by volume and sufficient to prevent dehydration of the benactyzine hydrochloride.

4,212,887

N-METHYL-N-(SULPHONIC ACID AMIDE-N'-SULPHENYL)-CARBAMIC ACID ESTERS

Alfons Hartmann, Beckingen; Engelbert Kühle, Bergisch-Gladbach; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

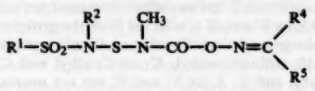
Division of Ser. No. 756,049, Dec. 30, 1976, Pat. No. 4,148,910. This application Oct. 2, 1978, Ser. No. 948,190

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1976, 2600981

Int. Cl.[2] A01N *9/16*; C07C *119/18*; C07F *9/02*; A01N *57/06*

U.S. Cl. 424—304 8 Claims

1. An N-methyl-N-(sulphonic acid amide-N'-sulphenyl)-carbamic acid ester of the formula



in which

R^1 is dialkylamino with 1 to 4 carbon atoms in each alkyl radical, phenyl or phenyl carrying at least one halogen, alkyl with 1 to 4 carbon atoms, nitro or trihalogenomethyl substituent,

R^2 is alkyl with 2 to 8 carbon atoms, cyclohexyl, phenyl or cycloalkyl or phenyl carrying at least one halogen, alkyl with 1 to 4 carbon atoms, nitro or trifluoromethyl substituent, and

R^4 and R^5 each independently is cyano or alkyl, alkoxy, alkylthio, alkoxycarbonyl, dialkylcarbamoyl or dialkoxyphosphoryl with up to 4 carbon atoms per alkyl moiety, or

R^4 and R^5, conjointly with the adjacent carbon atom, form an optionally methyl- or phenyl-substituted dithiolane, dithiane, oxathiolane or oxathiane ring.

4,212,888

ANILIDE DERIVATIVES AS ANTIDEPRESSANTS

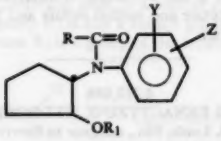
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 796,989, May 16, 1977, Pat. No. 4,128,663, which is a continuation-in-part of Ser. No. 777,599, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 746,191, Nov. 30, 1976, abandoned. This application Aug. 3, 1978, Ser. No. 930,688

Int. Cl.[2] A01K *31/24*; C07C *103/38*

U.S. Cl. 424—324 8 Claims

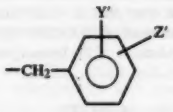
1. A compound of the formula



wherein the heavy dot (•) at the 1-position carbon atom of the cyclopentyl ring denotes the trans-configuration relative to the oxygen group (—OR_1) in the 2-position of the cyclopentyl ring;

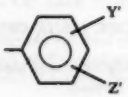
R is C_3 to C_6-cycloalkyl;

R_1 is hydrogen, C_1 to C_3-alkyl, C_3 to C_5-(allylic)alkenyl, the benzyl group



wherein Y' and Z' are as defined below, or the group

where R_2 is hydrogen, C_1 to C_3-alkyl, the benzyl group as above, or a phenyl group



wherein Y' and Z' are as defined hereinbelow; and each of Y and Z or Y' and Z' is selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_3-alkyl and C_1 to C_3-alkyloxy, and Y, Z, or Y' and Z' are not necessarily the same at the same time.

4,212,889

METHOD FOR PROCESSING FISH CONTINUOUSLY AND SERIALLY THROUGH A PLURALITY OF VESSELS

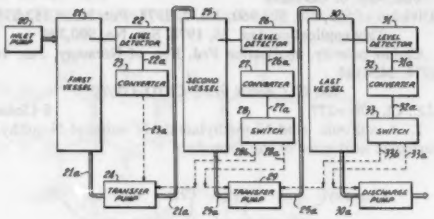
Manuel E. Fuentevilla, Cherry Hill, N.J., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed May 18, 1978, Ser. No. 907,335

Int. Cl.[2] A22C *25/00*

U.S. Cl. 426—7 4 Claims

1. A method for continuously processing fish to fish solubles and fish solids which comprises continuously passing a mixture of fish and processing reagents serially through a reaction system comprising a plurality of vessels, and controlling the flow of mixture from each vessel to the next, in a first mode of initial introduction of mixture into said system, by transferring the mixture from vessel to vessel in response to the level of mixture in the transferor vessel being above a predetermined level, subsequently changing the second and succeeding vessels to a second mode at the time of first discharge of product from the last vessel or at the time of cessation of introduction of mixture into the system, whichever is later, by transferring the mixture from vessel to vessel in response to the level of



mixture in the transferee vessel being below a predetermined level, and returning each vessel operating in the second mode to the first mode after the preceeding vessel has been emptied of mixture, wherein product can be continuously discharged from the last vessel of said reaction system at a steady rate and fish can be introduced into the first vessel of said reaction system while product is being discharged.

4,212,890

MANUFACTURE OF PELLETS FROM FEED MEALS

Hubert Tiefenbacher, Ludwigshafen; Friedrich Kraus, Mannheim, and Guenther Matthias, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,772

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729917

Int. Cl.[2] A23K *1/22*

U.S. Cl. 426—69 3 Claims

1. A process for the manufacture of pellets of feed meals, comprising:

mixing feed meals, which have not been pretreated with urea, homogeneously with from 0.1 to 2% by weight of a pulverulent urea-formaldehyde resin obtaned by spray-drying a urea-formaldehyde solution said urea-formaldehyde resin having a molar ratio of urea to formaldehyde of from 1:1.6 to 1:2 and having a free formaldehyde content from 1 to 4% by weight with reference to the urea-formaldehyde resin, said free formaldehyde being included in said molar ratio, and without further addition of urea pelletizing the mixture.

4,212,891

METHOD AND APPARATUS FOR STORING FOODSTUFFS

Yuko Fujita, and Hisashi Kudo, both of Kyoto, Japan, assignors to Japan Storage Battery Company Limited, Kyoto, Japan

Filed Aug. 8, 1978, Ser. No. 932,075

Claims priority, application Japan, Sep. 13, 1977, 52/110651; Sep. 14, 1977, 52/110945; Nov. 22, 1977, 52/140356

Int. Cl.[2] A01K *43/00*

U.S. Cl. 426—231 6 Claims

1. A method of storing foods in a storage chamber comprising:

applying a D.C. voltage to an electrolytic cell in order to remove oxygen from the atmosphere in said storage chamber, said cell comprising an electrolyte, an oxygen generating anode, and a gas diffusion cathode in contact with the atmosphere in said storage chamber and capable of selectively subjecting oxygen in the atmosphere to elec-

trolytic reduction at the cathode without substantially generating hydrogen; and

introducing air into said storage chamber in order to control the oxygen concentration in said storage chamber to a desired value less than the oxygen concentration in said air.

4,212,892

METHOD OF PREPARING A HIGH-PROTEIN SNACK FOOD

M. Helmy Chahine, and J. Alfred Brothers, both of Dartmouth, Canada, assignors to Nova Scotia Research Foundation Corporation, Canada

Filed Jun. 28, 1977, Ser. No. 810,724
Claims priority, application Canada, Apr. 13, 1977, 276098
Int. Cl.[2] A23J 3/00
U.S. Cl. 426—289 19 Claims

1. A method of preparing a high-protein snack food, comprising admixing a plastic protein gel selected from the group consisting of fish gel, soybean gel, and mixtures of fish gel and soybean gel with about 17 to 50 percent by weight, of the gel, of dry starch or flour to obtain a homogeneous mass of gel-starch material, forming the material into desired shaped, said protein gel containing sufficient water to render said gel pliable without the need for the addition of any further water, and thereafter cooking the material, and wherein all steps prior to cooking are carried out at a temperature of 5° C. or less when fish gel is present.

4,212,893

ACIDIFIED WHOLE MILK BEVERAGE AND METHOD OF PREPARATION

Jungo Takahata, Machida, Japan, assignor to Honey Bee Corporation, Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,286
Claims priority, application Japan, Feb. 10, 1978, 53-14348; Feb. 10, 1978, 53-14349
Int. Cl.[2] A23C 9/08, 9/10; A23L 2/02
U.S. Cl. 426—330.2 13 Claims

1. A method of manufacturing a stable, emulsified, acidified whole milk beverage which comprises

(1) adding an aqueous solution of locust bean gum to whole milk, the amount of locust bean gum being 0.3% by weight based on the total weight of said milk beverage, and agitating to form a whole milk emulsion;

(2) mixing said whole milk emulsion with at least one acidifying agent selected from the group consisting of fruit juice and organic acids acceptable for use with a beverage, at a temperature of 35° to 60° C., to form an acidified emulsion having a pH of between 3.4 and 3.6;

(3) stabilizing said acidified emulsion by stirring for 10 to 30 minutes;

(4) homogenizing said stabilized acidified emulsion of whole milk; and then

(5) sterilizing said stabilized, acidified emulsion of whole milk and placing it into a container, thereby producing a stable, emulsified whole milk, free from segregated curds, having a pH of from 3.4 to 3.6.

6. A stable, emulsified, acidified whole milk beverage free from segregated curds comprising whole milk, water, 0.3% by weight of locust bean gum, based on the total weight of the beverage, as a stabilizing agent, and an amount of at least one acidifying agent, selected from the group consisting of fruit juice and organic acids acceptable for use with beverages, sufficient to impart a pH of between 3.4 and 3.6 to said beverage.

4,212,894

SOFT-MOIST PET FOOD PROCESS

Roger W. Franzen, Jr., Pleasantville, N.Y.; Charles J. Cante, St. Anne, Ill.; Joseph J. Griffin, Bronx, N.Y.; Robert E. Schara, Norwalk, Conn., and Charles T. Stocker, Augusta, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,524
Int. Cl.[2] A23B 4/02, 4/14
U.S. Cl. 426—332 20 Claims

1. An improved process for preparing a meat-containing, intermediate-moisture animal food comprising meaty materials, and sufficient amounts of preservatives to stabilize the final product against microbial deterioration, adapted to be packaged without resort to sterilization and stored for extended periods of time without refrigeration, said process comprising:

(a) preparing a flowable slurry of fresh, uncooked meaty material in a solution containing sufficient preservatives to maintain the meat free from microbial spoilage for a period of at least 5 days without refrigeration and having a moisture content in excess of 50% and an A_w in excess of 0.88;

(b) holding the slurry at a temperature effective to maintain homogeneity of the slurry including dispersed fat until needed for processing;

(c) pasteurizing the meaty material;

(d) shaping the pasteurized meaty material, including any additional nutritional ingredients and preservatives, into the desired form; and

(e) packaging the shaped animal food in a substantially moisture-impermeable package.

4,212,895

PRODUCTION OF ISO-α-ACID

Derek R. J. Laws, Bexleyheath; Nigel A. Bath, Kemsing; Colin S. Ennis, Chislehurst; John A. Pickett, Kimpton, and Alfred G. Wheldon, Galley Wood, all of England, assignors to Brewing Patents Limited, London, England

Filed May 3, 1977, Ser. No. 793,357
Claims priority, application United Kingdom, Oct. 13, 1976, 42613/76
Int. Cl.[2] C12C 3/00, 9/02
U.S. Cl. 426—600 2 Claims

1. A method of making an iso-alpha-acid preparation, suitable for addition to beer without haze formation which method consists essentially of:

(i) extracting hops with liquid carbon dioxide at a temperature of from −5° C. to 20° C. and under a pressure of slightly greater than that of the corresponding vapor pressure of liquid carbon dioxide at the extraction temperature, thereby extracting at least a portion of the alpha-acids contained in the hops into the carbon dioxide;

(ii) evaporating off the liquid carbon dioxide under conditions such that the extract comes in contact only with equipment which is chemically inert to the extract, thereby recovering a primary hop extract of high purity consisting essentially of alpha-acids, beta-acids, hop oil and the following impurities: uncharacterized soft resins up to 3%; hard resins up to 0.5%; tannins up to 0.5%; chlorophyll up to 0.2%; fats and waxes up to 0.2%; fines up to 0.5% and inorganic salts up to 0.5%, the total impurities being up to 4% and said extract being yellow;

(iii) preparing an alkaline aqueous solution containing the extract; and

(iv) boiling this solution to convert substantially all the alpha-acids present therein to iso-alpha-acids.

4,212,896

MOLASSES-CONTAINING ANIMAL FEED HAVING RESILIENT STRUCTURE

Arthur V. Brown, Jr., Bessemer, and Richard J. Karrasch, Sterrett, both of Ala., assignors to The Jim Dandy Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 853,540, Nov. 21, 1977, Pat. No. 4,162,336. This application May 10, 1978, Ser. No. 904,386
The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.
Int. Cl.[2] A23K *1/02*
U.S. Cl. 426—623 3 Claims

1. a molasses-containing extruded food consisting essentially of

50% to 60% by weight of ground cereal grains,

15% to 35% by weight of a non-adhesive protein inclusive of the protein in said cereal grains,

7½ % to 20% by weight of inverted molasses, and

10% to 15% by weight of water,

said food having a microstructure, as seen by scanning electronmicroscopy at 200×, comprised in its greater part by convoluted layers and in its lesser part by inclusions in fissure-like spaces of elongated chamber-like cells, and being compressively deformable by more than 20% of its thickness without disintegration by crumbling and without loss of substantial elastic resiliency.

4,212,897

ADHERENT CONTROLLED RELEASE PESTICIDES USING ORGANOPOLYSILOXANES

Robert W. Young, New York, N.Y.; Samuel Prussin, Carmel, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to The Young, Prussin, MGK, J.V., New York, N.Y.

Continuation of Ser. No. 696,274, Jun. 15, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,630
Int. Cl.[2] A61K *31/695;* A01N *17/08*
U.S. Cl. 427—2 19 Claims

1. A composition consisting essentially of (a) an organopolysiloxane, soluble in organic solvents, and containing hydroxyl groups or functional groups which are hydrolyzable to hydroxyl groups, (b) a hydrolyzable titanium compound or a partial hydrolyzate thereof wherein said titanium compound is selected from the group consisting of tetraesters, tetraanhydrides, tetraamides and chelates of glycols, hydroxyacids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and (c) an insecticide, said composition being capable of in situ formation of a polymeric coating.

4,212,898

PROCESS FOR THE PRODUCTION OF COATED FUEL PARTICLES FOR HIGH TEMPERATURE REACTORS

Milan Hrovat, Rodenbach; Hans Huschka, and Gerhard Spener, both of Hanau, all of Fed. Rep. of Germany, assignors to HOBEG Hochtemperaturreaktor-Brennelement GmbH, Hanau, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,967
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751132
Int. Cl.[2] C05B *35/51;* G21C *3/58;* C04B *41/06*
U.S. Cl. 427—6 10 Claims

1. In a process for the production of coated nuclear fuel particles by batchwise deposition of a plurality of pyrolytic carbon layers or a mixture of pyrolytic carbon and silicon carbide layers and wherein the first layer is a porous pyrolytic carbon layer and wherein the coated particles are subsequently classified the improvement comprising determining the average density of the classified coated particles, placing all of the classified coated particles in a heavy liquid having a density deviating not more than 20% from said average density and selecting those particles by hydrostatic weighing which have a geometric density which does not deviate from the average value by more than 20% and separating them from the other particles.

4,212,899

PROCESS FOR PRODUCING A COLORANT CONTAINING HIGHLIGHTED COATED SUBSTRATE

Leonard E. Hodakowski, and Richard D. Jenkinson, both of St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 854,258, Nov. 23, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,215
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—44 11 Claims

1. A process for producing a colorant-containing highlighted coated substrate which comprises the steps of:

a. embossing the surface of a substrate to produce on said substrate surface a recessed impression;

b. coating the entire surface of the embossed substrate with a radiation curable fluid coating composition comprising from 20 weight percent to 80 weight percent of radiation reactive oligomer or resin, from 0 weight percent to 50 weight percent of a polyfunctional monomeric acrylate or methacrylate crosslinking agent and from 0.01 to about 15 weight percent of colorant, such that the coating composition follows the embossed surface, said composition being capable of curing to form a hard layer adhering to said substrate;

c. exposing the thus-coated substrate to ionizing or non-ionizing radiation to initiate the desired radiation cure of the coating;

d. continuing to irradiate said coated substrate until the entire coating hardens; and

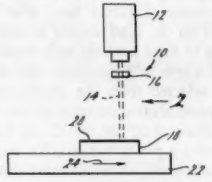
e. recovering a coated substrate on which the coating follows the embossed pattern and in which the recessed areas are highlighted with the colorant.

4,212,900

SURFACE ALLOYING METHOD AND APPARATUS USING HIGH ENERGY BEAM

Richard A. Serlin, 10 Barbour La., Bloomfield Hills, Mich. 48013

Continuation of Ser. No. 792,344, Apr. 29, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,241
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—53.1 49 Claims



1. A method for forming an alloy on the surface of a substrate at ambient temperature comprising the steps of:

placing a solidified material on the surface of said substrate while it is substantially at ambient temperature, said material being suitable for alloying with said substrate;

directing a beam of high intensity electro-magnetic energy from a source thereof at said material for a predetermined short period of time, the intensity of said high intensity beam and the duration of said predetermined short period of time being selected to: (1) substantially raise the temperature of said material above said ambient temperature solely by virtue of the energy supplied by said high intensity beam so as to melt said material during said predetermined short period of time, (2) cause alloying of said

material with said substrate in a surface zone thereof, and (3) limit the amount of thermal energy transmitted to said substrate to prevent substantial elevation of the temperature of said substrate below said surface zone and to allow rapid solidification of said material thereafter due to the dissipation of thermal energy into said substrate.

4,212,901

METHOD FOR TREATING A SUBSTRATE WITH A RADIATION AND CHEMICALLY CURABLE COATING COMPOSITION

Abraham van Neerbos, Tholen, and Adrianus C. J. van Oosterhout, Roosendaal, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jul. 10, 1978, Ser. No. 923,353

Claims priority, application Netherlands, Jul. 8, 1977, 7707669

Int. Cl.² B05D *3/06*

U.S. Cl. 427—53.1 **7 Claims**

1. A method for treating a substrate with a radiation curable coating composition based on a polyester resin esterified with acrylic acid and/or methacrylic acid, a vinyl compound and a photoinitiator, the coating composition being dried under the influence of light having a wave length of 200 to 600 nm, characterized in that the polyester resin esterified with meth(acrylic) acid has a hydroxyl number in the range of 50 to 250 and an ethylenic unsaturation equivalent weight in the range of 200 to 10,000 grams, and in that the coating composition also contains a polyisocyanate in an amount of 0.7 to 1.3 equivalents of isocyanate per equivalent of hydroxyl contained in the composition.

7. A method for treating a substrate with a radiation-curable coating composition comprising

applying to said substrate a coating composition comprising (1) a polyester resin esterified with acrylic acid and/or methacrylic acid and having an hydroxyl number in the range of 50 to 250 and an ethylenic unsaturation equivalent weight in the range of 200 to 10,000 grams, (2) a polyisocyanate present in an amount of about 0.7 to about 1.3 equivalents of isocyanate per equivalent of hydroxyl contained in said composition, (3) a vinyl compound, and (4) a photoinitiator,

initially curing the applied coating composition under the influence of light having a wave length of 200 to 600 nm, and

completing the curing by reacting the isocyanate groups of said polyisocyanate with the hydroxyl groups of said polyester resin.

4,212,902

METHOD FOR ALUMINIZING IMAGE DISPLAY FACEPLATES

Hugo A. Lopez, Glendale Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Division of Ser. No. 935,032, Aug. 18, 1978. This application Mar. 9, 1979, Ser. No. 19,214

Int. Cl.² B05D *5/12*; H01J *31/20*; B05D *3/10*

U.S. Cl. 427—64 **2 Claims**

1. In a method for aluminizing an image-display faceplate having a phosphor deposit therein, the method being the type including:

(a) applying an organic film on said faceplate,

(b) applying an aluminum film to said organic film, and

(c) baking out the organic film; an improvement which comprises:

(d) rewetting said faceplate prior to step (a) with a solution comprising:

(1) an aqueous colloidal dispersion of silica particles, said particles comprising about 0.5 to 1.5 weight-percent;

(2) a nonionic surfactant comprising about 0.001 to 0.004 weight-percent; and,

(3) an acidic pH-lowering substance in an amount sufficient to lower pH to about 6.2 to 7.8.

4,212,903

IMPROVING THE MAGNETIC PROPERTIES OF GAMMA-IRON (III) OXIDE

Georg Schnell; Fritz Hammon, both of Ludwigshafen, and Manfred Ohlinger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 490,619, Jul. 22, 1974, abandoned. This application Feb. 22, 1977, Ser. No. 770,989

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1972, 2254810

Int. Cl.² H01F *10/00*; B05D *5/12*

U.S. Cl. 427—127 **5 Claims**

1. A process for improving the magnetic properties of gamma-iron(III) oxide pigments which comprises:

applying to said gamma-iron(III) oxide pigments a basic compound selected from the group consisting of alkali metal hydroxides and alkaline earth metal hydroxides to provide a pigment crystal surface having a pH above 8, which basic compounds can be removed by elution of the said pigments after they have been heated at a temperature of from 400° to 700° C., and

heating said pigments at a temperature of from 400° to 700° C., said surface crystal pH remaining above 8 throughout said heating step, whereby the magnetic properties of said pigments are improved.

4,212,904

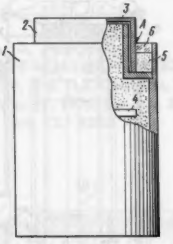
METHOD FOR TREATING ITEMS FROM MAGNETICALLY SOFT ALLOYS

Georgy N. Dubinin, Lazovsky pereulok, 4, kv. 35; Vladimir F. Rybkin, Leninsky prospekt, 37a, kv. 208; Mira P. Petrova, I Zborovsky pereulok, 15, kv. 7; Elizaveta L. Avrukh, ulitsa Chusovskaya, 10, korpus 2, kv. 35; Viktor V. Khramtsov, Schelkovskoe shosse, 81, kv. 90; Alexandr D. Zhivotchenko, ulitsa Kosmodemianskikh, 34a, kv. 39, all of Moscow, and Viktor F. Kuznetsov, ultisa Karpinskogo, 36, korpus 1, kv. 77, Leningrad, all of U.S.S.R.

Filed Jun. 4, 1979, Ser. No. 44,971

Int. Cl.² C23C *9/02*

U.S. Cl. 427—127 **4 Claims**



1. A method for treating articles made from magnetically soft alloys, comprising the steps of: chromizing the surface of the articles inside a powder chromizing mixture at a temperature of 800°–1200° C. and cooling subsequently the articles at a rate not exceeding that of recrystallization of a metal of said articles and applying diffusion processes of saturation of said articles, said articles being cooled at a rate close to that of diffusion transformations and of formation of magnetic structure in metal of said articles.

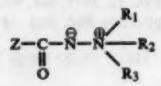
4,212,905

METHOD OF COATING SUPPORTS USING ADDITION COPOLYMERS OF AMINIMIDES

John C. M. Tsibris, Gainesville, Fla., assignor to Board of Regents, for and on behalf of the University of Florida, Tallahassee, Fla.

Division of Ser. No. 701,410, Jun. 30, 1976, Pat. No. 4,162,355.
This application Jun. 20, 1978, Ser. No. 917,276
Int. Cl.[2] C08F 4/04, 14/02; B05D 7/00; C03C 17/32
U.S. Cl. 427—221 5 Claims

1. A method of coating a support with an addition copolymer of (1) at least one aminimide of the formula:



wherein

R_1 and R_2 are the same or different and represent lower alkyl;

R_3 represents an organic group; and

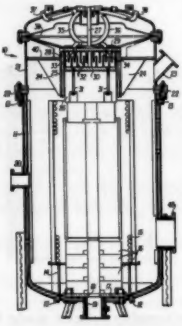
Z represents the residue of a polymerizable vinyl compound, and (2) a vinyl compound having at least one pendant primary halomethyl group, said polymer having coupled thereto by reaction with a portion of the pendant primary halomethyl groups an amine ligand which affords sites for binding in affinity chromatography, comprising contacting a support with a solvent solution of the polymer, removing said solvent and contacting said coated support with a non-solvent for the final polymer containing a primary amine having a pendant hydrophilic group, whereby said amine reacts with the remainder of said primary halomethyl groups and enhances the bond between said polymer and said support.

4,212,906

METHOD FOR THE PRODUCTION OF CARBON/CARBON COMPOSITE MATERIAL

Ronald Fisher, and Norman Smith, both of Rugby, England, assignors to Dunlop Limited, London, England

Division of Ser. No. 822,824, Aug. 8, 1977, Pat. No. 4,134,360.
This application Sep. 19, 1978, Ser. No. 943,854
Claims priority, application United Kingdom, Aug. 11, 1976, 33339/76
Int. Cl.[2] B05D 3/12
U.S. Cl. 427—237 4 Claims



1. A method for the deposition of carbon on a fibrous compressible substrate to produce an all-carbon composite article, the method comprising locating the fibrous substrate in a furnace provided interiorly with a ram, bringing the ram into contact with the substrate so that the substrate is subjected to pressure by the ram and cracking a hydrocarbon gas in the furnace to deposit carbon on the pressurised substrate.

4,212,907

PRE-TREATMENT FOR MOLYBDENUM OR MOLYBDENUM-RICH ALLOY ARTICLES TO BE PLATED

Ralph R. Wright, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 22, 1979, Ser. No. 22,897
Int. Cl.[2] C25D 5/34
U.S. Cl. 427—309 8 Claims

1. A pre-treatment for a surface which is to be provided with a metallic plating deposited from solution, said surface being a material selected from molybdenum and molybdenum-rich alloys, comprising:

anodizing said surface in aqueous amino-trimethylenephosphonic acid solution to form thereon a continuous gray molybdenum oxide film, and

removing said film.

8. In the method of electrolessly nickel plating a surface of a metallic material selected from the group consisting of molybdenum and molybdenum-rich alloys, said method including the steps of rendering said surface catalytic for the aqueous-bath reduction of nickel cations to metallic nickel and the corresponding oxidation of hypophosphite anions to phosphite anions and then electrolessly plating the resulting catalytic surface with nickel from an aqueous nickel cation--hypophosphite anion bath, the improvement comprising preceding said rendering step with the following sequence of operations:

electro-etching said surface in chromic acid--nitric acid solution at a current density in the range of from about 0.5 to 1.5 amperes/in^2 to provide it with a film-free matte finish, anodizing the electro-etched surface to form thereon a continuous gray oxide film, and

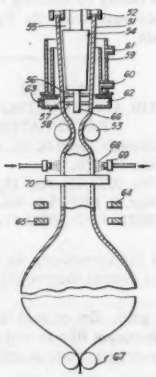
removing said film.

4,212,908

APPARATUS AND METHOD FOR PRODUCING COATED FILM

Brian N. Hendy, Welwyn, England, and John M. Ford, Dumfries, Scotland, assignors to Imperical Chemical Industries Limited, London, England

Filed Nov. 6, 1978, Ser. No. 958,937
Claims priority, application United Kingdom, Nov. 28, 1977, 49346/77
Int. Cl.[2] B05D 3/12
U.S. Cl. 427—355 10 Claims



7. A method of producing a coated film by depositing a coating medium on the surface of an axially moving cooled thermoplastic polymeric tubular extrudate and reheating and inflating the coated extrudate to form an oriented, coated tubular film comprising the step of substantially circumferen-

tially spreading the deposited coating medium onto the surface of the extrudate, prior to reheating and inflating, by successive contact of the deposited coating medium with each of a plurality of spreading members resiliently biased into engagement with said surface and rotating around the periphery of the extrudate in a common plane substantially normal to the longitudinal axis of said tubular extrudate.

4,212,909

FIREPROOF BARRIER COATING COMPOSITIONS

William F. Brown, Wausau, Wis., assignor to Wausau Homes, Inc., Wausau, Wis.

Division of Ser. No. 949,660, Oct. 10, 1978. This application Jun. 18, 1979, Ser. No. 49,292

Int. Cl.[2] C08L *61/24;* B05D *3/02*

U.S. Cl. 427—393.5 4 Claims

1. A method for fireproofing a flammable substrate comprising the steps of applying to the exposable surfaces of the substrate a continuous coating of a composition comprising an aqueous dispersion containing vinyl acetate, titanium dioxide, pumice, zinc oxide, sodium silicate, hydrated magnesium aluminum silicate, a comminuted high temperature fluorocarbon resin, a furan resin, comminuted charcoal, and a dispersing agent, and allowing said coating to cure to a hardened state.

4,212,910

PET BOTTLE ASSEMBLIES PRODUCED BY USING A HOT MELT ADHESIVE COMPRISING A BLOCK COPOLYMER AND A TACKIFYING RESIN

Thomas R. Taylor, South Somerville, and Paul P. Puletti, Glen Gardner, both of N.J., assignors to National Starch & Chemical Corporation, Bridgewater, N.J.

Filed Apr. 30, 1979, Ser. No. 34,100

Int. Cl.[2] B65D *11/04, 11/22;* C09J *3/14, 5/00*

U.S. Cl. 428—35 11 Claims

1. A PET bottle assembly comprising a PET bottle which has been blow-molded and joined to a HDPE base cup with a hot melt adhesive which consists essentially of a blend of: (1) a block copolymer selected from the class consisting of: (a) an A-B-A block copolymer where A is a monovinyl aromatic hydrocarbon and B is either a conjugated diene or a rubbery mono-olefin and (b) a teleblock copolymer comprising molecules having at least three branches radially branching out from a central hub, each said branch having polystyrene terminal blocks and a butadiene segment in the center; (2) at least one tackifying resin which serves to extend the adhesive properties of the system; (3) at least one stabilizer; and (4) at least one wax or oil diluent.

4,212,911

PHOTOCATHODE FOR ELECTRORADIOGRAPHIC AND ELECTROFLUOROSCOPIC APPARATUS AND METHOD FOR MANUFACTURING SAME

Rudolf Bäuerlein, Erlangen; Dieter Uhl, Uttenreuth; Heinrich Diepers, Erlangen, and Karl-Heinz Jablonski, Ebermannstadt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,524

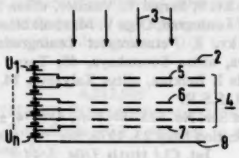
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715483

Int. Cl.[2] H01J *39/00, 43/00;* B32B *3/10;* B05D *3/06*

U.S. Cl. 428—131 7 Claims

1. A photocathode for electroradiographic and electrofluoroscopic apparatus of the ionography type, for absorption of x-rays using the external x-ray photo effect, comprising:

a stack of more than three foils perforated by an array of holes, said foils made of a material with an atomic number of a value on the order of the value of the atomic number of gold, the holes of each of said foils in said stack taking up at least 30% of the total area of the foil, with the space in between adjacent foils being between 5 μm and 5 mm, the thickness of each perforated foil being smaller than 10 times the range of the photoelectrons generated in the foil material and the total thickness of the stack being at least twice the range of the quanta of the incident radiation in



the foil material for the radiation with which the photocathode is to be used.

4,212,912

ADHESION IMPARTING LAYER OF ACRYLONITRILE-BUTADIENE COPOLYMER ON A BASE MATERIAL FOR PRINTED CIRCUITS

Johann Wartusch, Vellmar, and Helmut Fasbender, Kassel, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main and AEG Isolier- und Kunststoff GmbH, Kassel-Waldau, both of, Fed. Rep. of Germany

Filed Mar. 15, 1977, Ser. No. 777,700

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612438

Int. Cl.[2] C23C *3/02*

U.S. Cl. 428—209 7 Claims

1. In the combination of an insulating material, serving as a base material in the production of a printed circuit board, the base material being comprised of an epoxy resin, or of a phenolic resin, an adhesion imparting layer thereon, and a copper metallic layer on the adhesion imparting layer, the improvement wherein the adhesion imparting layer consists essentially of an elastomer of an acrylonitrile-butadiene copolymer crosslinked with an organic peroxide.

4,212,913

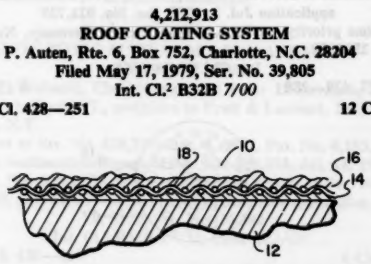
ROOF COATING SYSTEM

Jerry P. Auten, Rte. 6, Box 752, Charlotte, N.C. 28204

Filed May 17, 1979, Ser. No. 39,805

Int. Cl.[2] B32B *7/00*

U.S. Cl. 428—251 12 Claims



1. A roof coating system of high tensile strength and resilience comprising an underlayer of coating material, an intermediate layer of woven fiber glass fabric, and an overlayer of said coating material bonded to said underlayer with said intermediate fiber glass fabric layer embedded between said underlayer and overlayer, said woven fiber glass fabric including strands of bulked yarn in a relatively loose weave, and said coating material comprising an acrylic resin emulsion.

4,212,914
ELECTROINSULATING MATERIAL

Leonty T. Ponomareva; Nina V. Ponomareva, both of Ozerny pereulok, 2, kv. 9; Sergei V. Vasiliev, ulitsa Stoikosti, 2/11, kv. 93, all of Leningrad; Olga V. Maximikhina, Proletarskaya ulitsa, 47, kv. 2, Petrokrepost Leningradskoi; Nina M. Golopolosova, ulitsa Sovetskaya, 48, Tosno Leningradskoi, and Ljudmila I. Belkina, ulitsa Kalyaeva, 14, kv. 25, Leningrad, all of U.S.S.R.

Continuation of Ser. No. 522,250, Nov. 8, 1974, abandoned. This application May 23, 1978, Ser. No. 908,786
Int. Cl.[2] H01B *3/04, 3/44*
U.S. Cl. 428—268 8 Claims

1. An electroinsulating material consisting essentially of, in percent by weight,

fluorine rubber	20–87
resin	1–10
synthetic rubber	0–30
cross-linking agent	0.1–10
mica	10–60
filler	at least 0.9 and representing the balance

wherein said fluorine rubber is a copolymer of vinylidene fluoride; said resin is a low molecular weight sticky resin selected from the group consisting of epoxy resins based on diphenylolpropane, urea-formaldehyde resins, phenol-formaldehyde resins, aminophenol resins, melamine-formaldehyde resins, urethane resins, xylenol resins, coumarone resins and indene-coumarone resins; said cross-linking agent is a cross-linking agent for said fluorine rubber; the mica consists of particles having a thickness of 1–10 microns;

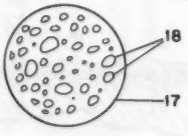
and said filler is a mineral filler which acts as a distribution agent for said mica.

3. A composite formed by dissolving the electroinsulating material of claim 1 in a solvent and applying said material onto a base as a calibrated layer.

4,212,915
MAT MATERIAL OF MELT-SPUN POLYMERIC FILAMENTS HAVING DISCONTINUOUS CAVITIES

Rolf Vollbrecht, Obernburg, and Karl Ostertag, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 738,985, Nov. 4, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,715
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2550070
Int. Cl.[2] D04H *1/58*
U.S. Cl. 428—288 8 Claims



1. A mat material containing non-woven melt-spun polymeric filaments of which at least some intersect each other and are fused together at least at some of the points of intersection, said filaments having a diameter of from 0.2 to 3 mm. and a plurality of adjacent, separate, uniform, discontinuous cavities enclosed in an external shell, said cavities comprising hollow spaces having between 20 and 80 volume % of each filament.

4,212,916
DENSE, FLEXIBLE COMPOSITE SHEET MATERIAL

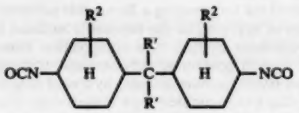
Minoru Tanaka, Gifu; Kenkichi Yagi, Kyoto, and Shunji Mizuguchi, Gifu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 19, 1979, Ser. No. 4,680
Claims priority, application Japan, Feb. 13, 1978, 53-14047
Int. Cl.[2] B32B *27/40*
U.S. Cl. 428—290 23 Claims

1. A composite sheet material comprising a fibrous sheet which is impregnated with a polyurethane elastomer, wherein said polyurethane elastomer comprises the reaction product of

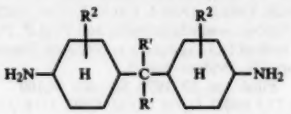
(A) a polymeric diol having a molecular weight of about 800–4000;

(B) an organic diisocyanate having the formula (I):

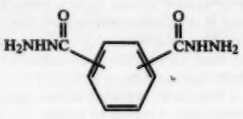


wherein R' and R^2 are hydrogen or an alkyl group having 1–5 carbon atoms, respectively, and

(C) a chain extender comprising 40–95 mole % organic diamine having the formula (II):



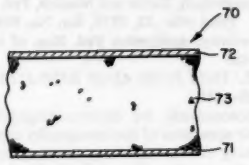
wherein R' and R^2 are hydrogen or an alkyl group having 1–5 carbon atoms, respectively, and 60–5 mole % phthalic acid dihydrazide having the formula (III):



4,212,917
POLYISOCYANURATE FOAM LAMINATE

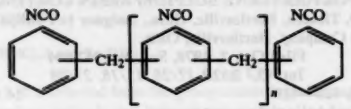
Michael J. Skowronski, Clearwater, and Alberto DeLeon, St. Petersburg, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Jun. 1, 1978, Ser. No. 911,502
Int. Cl.[2] B32B *3/26, 5/20, 31/14*
U.S. Cl. 428—310 15 Claims



12. A laminate comprising at least one facing sheet adhered to a polyisocyanurate foam which is the reaction product obtained by reacting:

A. a polymethylene polyphenylisocyanate which is a mixture of polymethylene polyphenylisocyanates having the formula:



wherein the mixture has:
(a) a functionality of 2.1 to 3.2,
(b) an equivalent weight between 120 and 180,
(c) a viscosity at 25° between 150 and 2500 centipoises, and
(d) n is an integer from 0 to 8 inclusive; and

B. a polyol which is a member selected from the group consisting of ethoxylated trimethylol propane, ethoxylated trimethylol ethane, ethoxylated pentaerythritol and ethoxylated glycerin and has an equivalent weight of 75 to 125; in the presence of

C. a catalyst that induces
(a) reaction of the isocyanate with the polyol and
(b) isocyanurate ring formation,

D. a blowing agent, and

E. a surfactant

wherein:

the equivalent ratio of A:B is 2:1 to 6:1,

C comprises from 1 to 5 weight percent of the composition,

D comprises 5 to 20 weight percent of the composition, and

E comprises 0.1 to 2 weight percent of the composition.

13. The laminate of claim 12 wherein:

A. the at least one facing sheet is a member selected from the group consisting of steel, aluminum, plastic, asbestos and felt,

B. the polyol is a member selected from the group consisting of ethoxylated trimethylol propane, ethoxylated pentaerythritol and ethoxylated glycerin,

C. the catalyst is a mixture of 2,4,6-tris-(dimethylaminomethyl)phenol and potassium octoate,

D. the blowing agent is trichlorofluoromethane, and

E. the surfactant is a silicone surfactant.

4,212,918

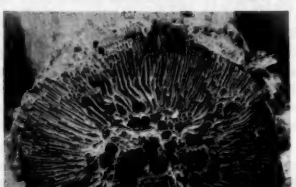
NONTACKY SHAPED OBJECTS FROM POLYMER LATICES

Mark J. Marquisee, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 700,965, Jun. 29, 1976, abandoned. This application Sep. 30, 1977, Ser. No. 838,365

Int. Cl.[2] B32B *5/18*

U.S. Cl. 428—403 **11 Claims**



1. A washed and dried nontacky, elastomeric shaped object which comprises a normally tacky, uncured elastomer containing, based on the total weight of the shaped object, less than 3% by weight of water soluble material and less than 1% by weight of volatile material, and having 0.05 to 3% by weight of an integral, porous coating of a water insoluble, hydrous, inorganic oxide selected from the group consisting of silicic acid polymers, aluminic acid polymers, silicic acid-aluminic acid copolymers, and mixtures thereof, substantially all of said inorganic oxide being present as a coating, and said shaped object having a minimum dimension of 0.01 to 10 millimeters.

4,212,919

STRENGTHENED POLYCHROMATIC GLASSES

Syed N. Hoda, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,937

Int. Cl.[2] C03C *21/00, 3/20, 3/04*

U.S. Cl. 428—410 **5 Claims**

1. Polychromatic glasses which, after chemical strengthening, exhibit a surface compression layer having a depth of at least 0.002", **a maximum central tension of at least** 0.7 kg/mm^2, and a modulus of rupture of at least approximately 30,000 psi consisting essentially, by weight on the oxide basis as calculated from the batch, of about 11–18% Na_2O, 60–70% SiO_2, 2–12% ZrO_2, 0.005–0.3% Ag, 1–4% F, and an amount of at least one halide selected from the group of Cl, Br, and I sufficient to react stoichiometrically with the Ag, but not more than about 3%.

4,212,920

FIREPROOFING COMPOSITION COMPRISING SODIUM SILICATE, GUM ARABIC OR OTHER GUM, AND A WATER DISPERSIBLE POLYMER SELECTED FROM THE CLASS OF EPOXY POLYMERS, NATURAL LATICES AND SYNTHETIC LATICES

Winthrop W. Seamans, 56 Hood St., Hayward, Calif. 94541

Filed Jul. 10, 1978, Ser. No. 922,834

Int. Cl.[2] B32B *27/38;* C08L *5/04*

U.S. Cl. 428—413 **15 Claims**

1. A fire retardant composition useful for surface coating to impart fire resistance to a wood substrate to which the composition is applied, said composition comprising (a) an aqueous solution of alkali metal silicate, (b) a substance selected from the class of natural gums, synthetic gums and water soluble alginates and (c) a water-insoluble, water-dispersible polymer selected from the class of epoxy polymers, natural latices and synthetic latices, said silicate substantially exceeding the amount of components (b) and (c), the combined proportions of (a) and (b) being sufficient to impart fire retardant characteristics to the composition; the amount of (c) being sufficient to impart moisture resistance to wood coated by the composition.

7. Wood coated with the composition of claim 1.

4,212,921

NON TOXIC ACTIVATORS FOR ADHESIVE COMPOSITIONS

Leon E. Wolinski, Cheektowaga, and Peter D. Berezuk, Kenmore, both of N.Y., assignors to Pratt & Lambert, Inc., Buffalo, N.Y.

Division of Ser. No. 858,702, Dec. 8, 1977, Pat. No. 4,155,950, and a continuation-in-part of Ser. No. 705,333, Jul. 14, 1976, Pat. No. 4,080,238, and a continuation-in-part of Ser. No. 763,145, Jan. 27, 1977, Pat. No. 4,126,504. This application Apr. 2, 1979, Ser. No. 26,293

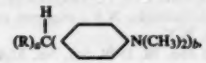
Int. Cl.[2] B32B *27/38;* C08F *283/04*

U.S. Cl. 428—414 **6 Claims**

1. A coated article comprising a substrate having coated thereon an activatable curable adhesive comprising a non-reactive thermoplastic polyurethane resin or a non-reactive elastomer dissolved in a non-acid methacrylic or acrylic monomer, and a methacrylic acrylic acid monomer, said monomers being essentially devoid of peroxy catalyst activation capability, said solution containing an effective amount of a peroxy catalyst, the said adhesive being activatable by contact with a peroxy catalyst activator; the improvement comprising having in

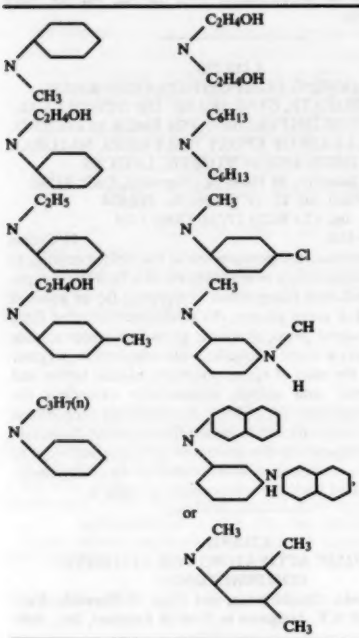
addition in said adhesive a stable, non-toxic, peroxy catalyst activator soluble in the adhesive solution, to activate the peroxy catalyst said activator being selected from the group consisting of:

(a)



R=H or phenyl, a=0 or 1, a+b=3 and when R is phenyl, a is 1,

(b) $CH_2{=}CH(CH_3)COOCH_2CH(OH)CH_2A$, which is different from the other acrylic or methacrylic monomers in the adhesive, wherein A is one of:



(c) homopolymers of the compounds of (b)

(d) a copolymer of at least 25% by weight of a compound of (b) with a member selected from the group consisting of methyl methacrylate, methyl acrylate, 2-ethyl hexyl acrylate, or butyl acrylate, and

(e) the reaction products of epoxy polymers with secondary amines selected from the group consisting of N-methyl aniline, N-methyl-p-toluidine, N-β-hydroxy ethyl aniline, N-ethyl aniline, N-n-propyl aniline, N-β-hydroxy ethyl-p-toluidine, diethanol amine, dihexyl amine, p-chloro-N-methylaniline, N,N'-dimethyl-p-phenylene diamine, N,N'-di-2-naphthyl-p-phenylene diamine and N-methyl-3,5-xylidene, wherein from 0.25 to one amino equivalent weight is reacted with one oxirane equivalent weight.

4,212,922

POLY(ARYLENE SULFIDE) RESIN COATING

Dale O. Tieszen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1978, Ser. No. 947,804
Int. Cl.[2] B32B *27/28, 15/18, 27/08*
U.S. Cl. 428—419 **14 Claims**

1. A coated article comprising:

a metal substrate,

a cured first coating adhered to said metal substrate comprising poly(arylene sulfide) and an effective amount ranging from about 5 to 70 weight percent of said first coating of manganese dioxide suitable for improving adhesion of poly(arylene sulfide) to said substrate, and

a cured finish coating comprising poly(arylene sulfide) applied to said first coating.

4,212,923

LAMINATE USING A POLY(ARYLENE SULFIDE)-POLYTETRAFLUOROETHYLENE ADHESIVE

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 560,394, Mar. 20, 1975, Pat. No. 4,157,273. This application Feb. 6, 1979, Ser. No. 9,617
Int. Cl.[2] C09J *5/04*
U.S. Cl. 428—419 **10 Claims**

1. A laminate comprising a first material bonded to a second material by an intermediate adhesive comprising a blend of a poly(arylene sulfide) resin and polytetrafluoroethylene wherein said first and second bonded materials are materials which can be heated above the fusion temperature of said poly(arylene sulfide) without substantial deformation.

4,212,924

NOVEL WHITEWARE BODIES AND ENERGY EFFICIENT PROCESS FOR THEIR PRODUCTION

James S. Reed, and Roger H. Moore, both of Alfred, N.Y., assignors to Alfred University Research Foundation, Alfred, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,177
Int. Cl.[2] B32B *17/06;* C03C *9/00*
U.S. Cl. 428—428 **18 Claims**

15. A glazed ceramic whiteware body having a glaze composition on a ceramic whiteware body, said body consisting essentially of from about 20% by weight to about 50% by weight of a matrix of an alkali phosphate frit, said alkali phosphate frit having a softening point below the quartz inversion temperature of 573° C., and from about 50% by weight to about 80% by weight of a particulate quartz filler dispersed in said matrix, and said glaze composition comprising an alkali phosphate frit and a sufficient amount of a modifying material to make the thermal expansion coefficient of the glaze compatible with the thermal expansion coefficient of the whiteware body.

4,212,925

HEAT INSULATING ARTICLES

Günter Kratel; Günter Stohr, both of Durach, and Hans Katzer, Munich, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,721
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754517
Int. Cl.[2] B32 *9/04;* B05D *3/02*
U.S. Cl. 428—447 **5 Claims**

1. A process for improving heat insulating elements which are prepared via a dry process from silicon dioxide having a surface area of at least 50 m^2/g and opacifiers which comprises treating the surface of the heat insulating elements with at least 1 organosilicon compound containing from 1 to 4 silicon atoms selected from the group consisting of hexamethylcyclotrisilox-

ane, octamethylcyclotetrasiloxane and silicon compounds of the formulas

$$(R_3Si)_aZ \text{ and } R_aSiZ'_{4-a}$$

in which R is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, Z is selected from the group consisting of hydrogen, halogen, OH, —OR', —NR'X, —ONR'$_2$, —SR', —OOCR', —O—, —NX and —S—, Z' is selected from the group consisting of hydrogen, halogen, —OH, —OR', —NR'X, —ONR'$_2$, —SR' and —OOCR', R' is a radical having from 1 to 4 carbon atoms, X is selected from the groups consisting of hydrogen and R' and a is 1 or 2, and thereafter removing the excess organosilicon compound employed in the treatment of the elements.

4,212,926
PARTS SUBJECT TO WEAR WHICH COME INTO CONTACT WITH METAL MELTS

Günter Gelsdorf, Nordenstadt; Hermann Leupold, Walluf, and Franz Schellberg, Wiesbaden-Frauenstein, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 13, 1976, Ser. No. 714,196

Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624299

Int. Cl.^{2} C04B *7/32, 7/34, 9/00;* B32B *15/04*

U.S. Cl. 428—472 **8 Claims**

1. Parts subject to wear which come into contact with a metal melt, said parts comprising means for contacting a steel melt and withstanding stresses caused by said steel melt, said means including a hydraulically setting high-alumina refractory concrete, said refractory concrete having following physical properties:

(a) a compression strength of at least 400 kp/cm^2 as measured cold on a dried crude product;

(b) a compression strength of at least 700 kp/cm^2 after firing at 1400° C.; and

(c) a dimensional stability of at least ±0.2% at said 1400° C.

4,212,927
PROCESS FOR PREPARING ARTIFICIAL LEATHER COMPOSITE

Daniel Gomez, and Giampaolo Bartoli, both of Le Guillermet, France, assignors to Arjomari-Prioux, France

Filed Dec. 12, 1977, Ser. No. 859,871

Claims priority, application France, Dec. 17, 1976, 76 38197

Int. Cl.^{2} B05D *1/18, 3/02;* B32B *23/08;* B32D *27/10*

U.S. Cl. 428—512 **13 Claims**

1. A process for the preparation of an artificial leather composite material for decoration, coating and shaping, in which a support comprising cellulosic fibres is treated to a sequential series of baths, each comprising one of either an aqueous dispersion or a suspension of a macromolecular substance, said process comprising the successive steps of:

(a) subjecting the fibrous support to an aqueous dispersion bath of at least one binding agent thereby introducing said at least one binding agent into said fibrous support;

(b) impregnating the fibrous support by subjecting same to an aqueous bath containing at least one macromolecular substance chosen from the group consisting of acrylic polymers and copolymers,

(c) coating the fibrous support by subjecting same to an aqueous bath containing at least one macromolecular substance chosen from the group consisting of vinylic and acrylic polymers and copolymers, to form an intermediate layer;

(d) coating the coated fibrous support by subjecting same to an aqueous bath containing at least one macromolecular substance chosen from the group consisting of vinylic and acrylic polyers and copolymers and at least one coalescence agent, to form a finishing layer;

wherein the ratio of the introduced said at least one binding agent to the fibrous support in step (a) is in the range of between 5 to 30 parts by weight of said at least one binding agent to 100 parts by weight of said fibrous support;

the ratio of the impregnated at least one macromolecular substance to the fibrous support in step (b) is in the range of between 5 to 25 parts by weight of the impregnated macromolecular substance to 100 parts by weight of the fibrous support;

the ratio of the coated macromolecular substance to the fibrous support in step (c) is in the range of between 5 to 10 parts by weight of the coated macromolecular substance to 100 parts by weight of the fibrous support;

and the ratio of the finishing layer to the coated fibrous support in step (d) is in the range of between 5 to 25 parts by weight of the finishing layer to 100 parts by weight of the coated fibrous support.

13. An artificial leather composite material produced in accordance with the process of claim 1.

4,212,928
WOOD-POLYMER COMPOSITES

William C. Arney, Jr., St. Albans, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,773

Int. Cl.^{2} B32B *23/08, 27/10*

U.S. Cl. 428—514 **2 Claims**

1. A composite comprising wood cellulose and as a sealer a polymer of:

(a) 50 to 60 weight percent of methyl methacrylate, and

(b) 35 to 45 weight percent of ethyl acrylate, and

(c) 1 to 8 weight percent of methacrylic acid, and

(d) 0.2 to 1 weight percent of pentaerythritol triacrylate.

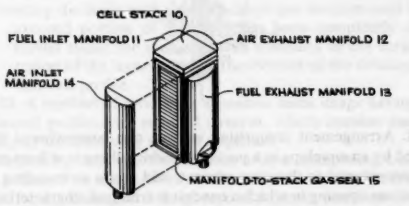
4,212,929
FUEL CELL MANIFOLD SEALING SYSTEM

Paul E. Grevstad, West Hartford; Carl K. Johnson, Manchester, and Anthony P. Mientek, Glastonbury, all of Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1979, Ser. No. 27,690

Int. Cl.^{2} H01M *2/08*

U.S. Cl. 429—37 **11 Claims**

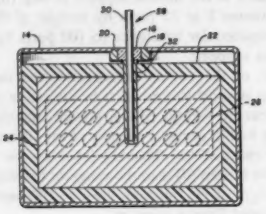


1. A manifold-to-stack seal for a fuel cell stack comprising: means for producing a seal between a manifold and an associated fuel cell stack including a polymer seal frame positioned intermediate lip sections of the manifold and an associated surface of a fuel cell stack, means for urging said manifold lip sections against said seal frame and said seal frame against said fuel cell stack, whereby as the fuel cell stack undergoes compressive creep the polymer seal frame creeps therewith, such as to permit relative motion only between said manifold and said polymer seal frame while maintaining a sealing effect therebetween.

4,212,930
LITHIUM-HALOGEN BATTERIES

Lee F. Athearn, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 15, 1979, Ser. No. 20,809
Int. Cl.[2] H01M 2/26
U.S. Cl. 429—101 9 Claims

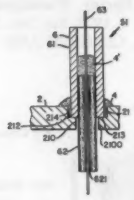


1. A lithium-halogen battery in which at least one of the electrical leads of at least one of the electrodes is provided, on at least a portion of its length, with a protective layer of a lithium halide.

4,212,931
ARRANGEMENT COMPRISING A COMPARTMENT AND A CONDUIT

François Cadart, Ceyrat, and Bernard Pflieger, Chamalieres, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jun. 19, 1978, Ser. No. 916,482
Claims priority, application France, Jun. 28, 1977, 77 20243
Int. Cl.[2] H01M 2/30
U.S. Cl. 429—104 17 Claims

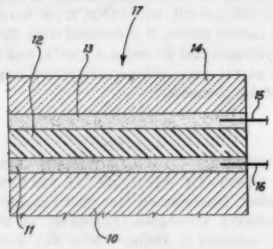


1. Arrangement comprising at least one compartment defined by an envelope in a portion of which there is at least one recess external to the compartment, said recess surrounding at least one opening in which a conduit is arranged, characterized by the fact that the conduit is constituted of at least one outer sheathing and of at least one inner sheathing, the inner sheathing having at least one channel over its length and fitting within the outer sheathing, one end of the outer sheathing constituting a shoulder resting against the bottom of the recess and the inner sheathing being arranged in the opening, and further characterized by the fact that a weld material disposed at least in the recess on the outside of the shoulder forms an assembly between the envelope and the conduit or conduits corresponding to the recess, the shoulder resting against the bottom of the recess either directly or via a thin film of the weld material.

4,212,932
DEVICE FOR THE DIRECT CONVERSION OF RADIANT ENERGY TO ELECTRICAL ENERGY

Seba Calgari; Vittorio Sirtori, and Ignazio R. Bellobono, all of Milan, Italy, assignors to Societe' Nazionale Industria Applicazioni Viscosa S.p.A. (Snia Viscosa), Milan, Italy

Filed Feb. 22, 1979, Ser. No. 14,156
Claims priority, application Italy, Feb. 28, 1978, 20678 A/78; Nov. 24, 1978, 30173 A/78
Int. Cl.[2] H01M 6/30, 6/36
U.S. Cl. 429—111 22 Claims

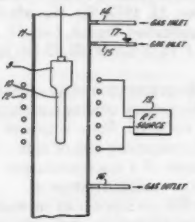


1. Cell for the direct conversion of radiant energy to electrical energy, which comprises two layer-like zones each comprising a transparent material and at least one photochromic compound which is a spiro-2H-pyrane, electrical conduction means between said two zones, and two electrodes.

4,212,933
CURRENT COLLECTOR FOR ELECTROCHEMICAL CELLS AND METHOD OF MAKING

Trevor L. Markin, Goring-on-Thames; Roger J. Bones, Abingdon, both of England; Keith R. Linger, Sarnia, Canada; Peter J. Bindin, Runcorn, England; Michael P. J. Brennan, Helsby, via Warrington, England, and Geoffrey J. May, Frodsham, England, assignors to Chloride Silent Power Limited, London, England

Filed May 22, 1978, Ser. No. 908,438
Claims priority, application United Kingdom, Mar. 23, 1977, 21709/77
Int. Cl.[2] H01M 6/00
U.S. Cl. 429—122 21 Claims



1. A cathode current collector for a sodium-sulphur cell, wherein said collector comprises an electrically conductive substrate having a surface selected from the group consisting of nickel, a nickel-containing alloy, molybdenum, titanium and tungsten, said substrate being coated with carbon, wherein the coated substrate is the product obtained by a process comprising contacting said substrate with a gas atmosphere comprising an inert gas and a carbon-containing gas and providing a glow discharge in an electric field sufficient to form ions of said inert gas and to bombard said substrate with said ions to thereby substantially clean said substrate, and contacting the resulting clean substrate with a plasma sheath of carbon produced by

decomposition of said carbon-containing gas in a glow discharge with the substrate heated to a temperature of 200° C.–1000° C. in the presence of inert gas and in an electric field, wherein said clean substrate is enveloped by said plasma and carbon is deposited on said clean substrate to thereby form a highly adherent and stable coating of carbon on said substrate capable of withstanding conditions in a cathodic region of a sodium sulphur cell.

5. A method of making a cathode current collector for a sodium-sulphur cell, wherein said collector comprises an electrically conductive substrate having a surface selected from the group consisting of nickel, a nickel-containing alloy, molybdenum, titanium and tungsten, said substrate being coated with carbon, wherein said process comprises contacting said substrate with a gas atmosphere comprising an inert gas and a carbon-containing gas and providing a glow discharge in an electric field sufficient to form ions of said inert gas and to bombard said substrate with said ions to thereby substantially clean said substrate, and contacting the resulting clean substrate with a plasma sheath of carbon produced by decomposition of a carbon-containing gas in a glow discharge with the substrate heated to a temperature of 200° C.–1000° C. in the presence of inert gas and in an electric field, wherein said clean substrate is enveloped by said plasma and carbon is deposited on said clean substrate to thereby form a highly adherent and stable coating of carbon on said substrate capable of withstanding conditions in a cathodic region of a sodium sulphur cell.

4,212,934
POLE SEAL FOR STORAGE BATTERIES

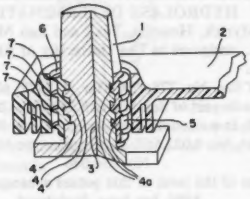
Klaus Salamon, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,749

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757568

Int. Cl.² H01M 2/02

U.S. Cl. 429—181 **3 Claims**



1. An electric storage battery with poles which are led sealed through the housing lid, which is of synthetic plastic, wherein

the pole shaft extends in axially displaceable manner through an opening in the housing lid and has a plurality of annular recesses axially spaced along the shaft, and

the pole shaft is provided with a synthetic plastic mantle which has a plurality of internal annular ribs engaging and interlocking with the recesses in the pole shaft, and a plurality of axially spaced external annular sealing lips, the lips adjoining the inner wall of the opening in frictionally sealing manner,

the mantle with its ribs and lips forming the only seal between pole shaft and housing lid.

4,212,935
METHOD OF MODIFYING THE DEVELOPMENT PROFILE OF PHOTORESISTS

Benjamin J. Canavello, Stony Point; Michael Hatzakis, Ossining, both of N.Y., and Jane M. Shaw, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1978, Ser. No. 880,926

Int. Cl.² G03C 5/00

U.S. Cl. 430—326 **24 Claims**

1. A method of producing a positive resist image having a sidewall profile with reduced overcut, which consists essentially of the following steps in sequence:

depositing on a substrate surface a layer comprising a mixture of an alkali soluble resin, a light sensitive sensitizer having diazo and keto groups at adjacent positions on an aromatic ring and a first solvent;

baking the layer at an elevated temperature to remove most of the solvent in the layer;

imagewise exposing the layer to actinic light to alter the solubility characteristics of the exposed portion of the layer;

treating the layer with a second solvent which is incapable of completely dissolving the layer and which is different from but miscible with the solvent still remaining in the layer so as to reduce the alkali solubility of only a surface region of the layer; and

treating the layer with an alkali developer solution until the exposed portion of the layer has been completely dissolved away, the reduced alkali solubility of the surface region of the layer reducing the overcut of the developed sidewall profile.

17. A method of producing a positive resist image having a sidewall profile with reduced overcut, which consists essentially of the following steps in sequence:

depositing on a substrate surface a layer comprising a mixture of an alkali soluble resin, a light sensitive sensitizer having diazo and keto groups at adjacent positions on an aromatic ring and a first solvent;

at least partly drying the layer in air to remove some of the first solvent;

treating the layer with a second solvent which is incapable of completely dissolving the layer and which is different from but miscible with the solvent still remaining in the layer so as to reduce the alkali solubility of only a surface region of the layer;

baking the layer at an elevated temperature to remove most of the solvents in the layer;

imagewise exposing the layer to actinic light to alter the solubility characteristics of the exposed portion of the layer; and

treating the layer with an alkali developer solution until the exposed portion of the layer has been completely dissolved away, the reduced alkali solubility of the surface region of the layer reducing the overcut of the developed sidewall profile.

23. A method of producing a positive resist image having a sidewall profile with reduced overcut, which consists essentially of the following steps in sequence:

depositing on a substrate surface a layer comprising a mixture of an alkali soluble resin, a light sensitive sensitizer having diazo and keto groups at adjacent positions on an aromatic ring and a first solvent;

baking the layer at an elevated temperature to remove most of the solvent in the layer;

treating the layer with a second solvent which is incapable of completely dissolving the layer and which is different from but miscible with the solvent still remaining in the layer so as to reduce the alkali solubility of only a surface region of the layer;

imagewise exposing the layer to actinic light to alter the solubility characteristics of the exposed portion of the layer; and

treating the layer with an alkali developer solution until the

exposed portion of the layer has been completely dissolved away, the reduced alkali solubility of the surface region of the layer reducing the overcut of the developed sidewall profile.

4,212,936

COLOR CONTRAST RADIOGRAPHIC FILM

Claudio Giampieri, Carcare, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 583,404, Jun. 3, 1975, abandoned. This application Nov. 25, 1977, Ser. No. 854,629

Int. Cl.[2] G03C *1/76*

U.S. Cl. 430—503 10 Claims

1. A photographic element for use in radiography which includes a base and, on one side of said base, only two silver halide emulsion layers, said element characterized by the fact that

(1) said two silver halide emulsion layers in the element may contain as couplers only colorless cyan forming couplers and yellow colored couplers;

(2) at least one of said emulsion layers is reactively associated with said colorless cyan forming coupler so as to give a negative colored cyan image upon color development with p-phenylene diamine,

(3) the other of said emulsion layers is reactively associated with said yellow colored coupler so as to leave a yellow colored positive image and a magenta colored negative image upon color development with p-phenylene diamine.

4,212,937

HEAT DEVELOPABLE PHOTOSENSITIVE MATERIALS

Kageyasu Akashi; Minoru Akiyama; Tetsuo Shiga; Takeki Matsui; Yoshio Hayashi; Takeo Kimura, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,620

Claims priority, application Japan, Dec. 23, 1977, 52-154353; May 31, 1978, 53-64241

Int. Cl.[2] G03C *1/02*

U.S. Cl. 430—620 11 Claims

1. In a heat developable photosensitive material comprising:

(a) an organic silver salt oxidizing agent;

(b) a halogen molecule or an organic haloamide compound; and

(c) a reducing agent for silver ion; the improvement which comprises incorporating therein (d) at least one nitrogen-containing organic base selected from the group consisting of pyridine, quinoline, isoquinoline, acridine, phenanthridine, pyridazine, pyrimidine, pyrazine, cinnoline, phthalazine, quinazoline, quinoxaline, phenazine, m-, o-, p-phenanthroline, pteridine, pyrazole, imidazole, benzimidazole, 2-chloropyridine, 3-chloropyridine, 2-bromopyridine, 3-bromopyridine, 2-methylpyridine, 3-methylpyridine, 4-methylpyridine, 2,6-diisopropylpyridine, 2-isopropylpyridine, 2-tertbutylpyridine, 3-phenylpyridine, 2,6-di-tert-butylpyridine, 3-acetylpyridine, $\alpha\alpha'$-dipyridyl, β,β'-dipyridyl, γ,γ'-dipyridyl, 5-nitro-1,10-phenanthroline, 2-methylquinoline, 3-methylquinoline, 4-methylquinoline, 2-chloroquinoline, 4-chloroquinoline, 2-methoxyisoquinoline, 4-methylpyrimidine, 2-dimethylaminopyrimidine, 2-methoxyquinazoline, 2-methylquinoxaline, 1-methylpyrazole and 2-methylpyrazole, in an amount of about 0.001 mole to about 1 mole per mole of the organic silver salt oxidizing agent (a).

4,212,938

REAGENT AND METHOD FOR THE DETERMINATION OF CHOLESTEROL

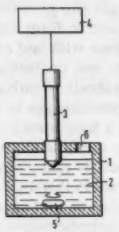
Wolfgang Gruber, Garatshausen; Hans U. Bergmeyer, Tutzing; Erich Bernt, Munich; Alexander Hagen, Tutzing; Peter Roeschlau, Tutzing; Gunter Lang, Tutzing, and Klaus Beaucamp, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed May 15, 1973, Ser. No. 360,515

Claims priority, application Fed. Rep. of Germany, May 17, 1972, 2224132

Int. Cl.[2] C12Q *1/50*

U.S. Cl. 435—11 20 Claims



1. A test composition for determining total cholesterol in a biological fluid sample comprising a chemical system having cholesterol ester hydrolase activity, a chemical system having cholesterol oxidase activity, and means for determining at least one of the reaction products produced when free cholesterol is contacted with said chemical system having cholesterol oxidase activity.

2. Method for the determination of cholesterol in a sample comprising incubating the sample in an aqueous medium with cholesterol esterase and cholesterol oxidase, characterized by its ability to convert cholesterol to cholestenone with the formation of hydrogen peroxide, and determining either the oxygen consumption, the H_2O_2 formed, or cholestenone as a measure of the initial cholesterol content in the sample.

4,212,939

SUBSTRATE SOLUTION FOR CARBOXYLIC ESTER HYDROLASE DETERMINATION

James E. Myrick, Houston, Tex., and Leo M. Hall, Birmingham, Ala., assignors to The University of Alabama, Birmingham, Ala.

Division of Ser. No. 775,470, Mar. 8, 1977, abandoned, and a continuation-in-part of Ser. No. 615,559, Sep. 22, 1975, said Ser. No. 775,470, is a continuation-in-part of Ser. No. 615,559, Sep. 22, 1975, Pat. No. 4,022,667. This application Nov. 22, 1977, Ser. No. 854,046

The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.

Int. Cl.[2] G01N *31/14, 31/22*

U.S. Cl. 435—19 13 Claims

1. A stable, clear reagent solution for the analysis of carboxylic acid ester hydrolases which comprises a water insoluble vinyl ester of carboxylic acid, a nonionic detergent, a buffer, and neutral salts, wherein the value of the HLB of said detergent is from 13 to 18, said HLB value being chosen to obtain the highest specific activity for said ester hydrolase; wherein the ionic strength of said solution is adjusted by inclusion of said neutral salts to obtain the highest specific activity for said ester hydrolase; wherein the amounts of said ester, detergent and buffer, said HLB value and said ionic strength are chosen so that when said hydrolase is mixed with said reagent, the mixture is clear and has a stable spectrophotometric absorbance, and wherein said buffer is N,N-bis(2-hydroxy-ethyl)glycine.

4,212,940

PROCESS FOR THE PREPARATION OF 21-HYDROXY-20-METHYLPREGNANE DERIVATIVES

Alfred Weber; Mario Kennecke, and Rudolf Milller, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 970,885
Int. Cl.[2] C07B *29/02*
U.S. Cl. 435—55 10 Claims

1. In a process for preparing 21-hydroxy-20-methylpregnane derivatives by fermenting a zoosterol or a phytosterol with a culture of Mycobacterium spec. NRRL B-3683 or NRRL B-3805 or a variant or mutant thereof,

the improvement which comprises conducting the fermentation at a pH value of 6.0–8.0 in the presence of an amount of borate ions, triphenylborate or a trialkylborate of the formula

$B(OR_2)_3$,

wherein R_2 represents identical alkyl groups of 1–6 carbon atoms, effective to increase the yield of the 21-hydroxy-20-methylpregnane derivatives produced.

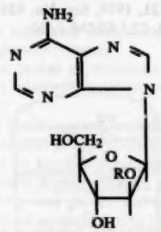
4,212,941

METHOD FOR THE PRODUCTION OF 9-(2-O-ACYL-β-D-ARABINOFURANOSYL)ADENINE COMPOUNDS

David C. Baker, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

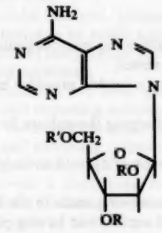
Division of Ser. No. 687,271, May 17, 1976, Pat. No. 4,055,718.
This application May 23, 1977, Ser. No. 799,631
Int. Cl.[2] C12P *19/32*
U.S. Cl. 435—92 5 Claims

1. A method for the production of a 9-(2-O-acyl-beta-D-arabinofuranosyl)adenine compound having the formula



I

wherein R is a straight or branched chain alkanoyl group having from 2 to 4 carbon atoms which comprises contacting a 9-(beta-D-arabinofuranosyl)adenine ester compound represented by the formula



II

where R has the same significance and R' is hydrogen or a lower alkanoyl group with an acylase capable of deacylating the 3 and 5-O-acyl groups; said contacting being carried out at 20°–45° C. at a pH of 6.5–7.5, and recovering the product.

4,212,942

METHOD OF PRODUCING SALINOMYCIN ANTIBIOTICS

Yukio Miyazaki, Ageo; Akira Shibata, Zama; Tateo Yahagi, Kawagoe; Masayuki Hara; Kaoru Hara, both of Tokyo; Singo Yoneda, Kuki; Hiroko Kasahara, Matsudo, and Yuko Nakamura, Tokyo, all of Japan, assignors to Kaken Chemical Company, Limited, Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,231
Claims priority, application Japan, May 31, 1977, 52-62802; Jun. 1, 1977, 52-63215
Int. Cl.[2] C12P *17/18*
U.S. Cl. 435—119 4 Claims

1. A method of producing salinomycins, which comprises culturing a salinomycins-producing Streptomyces microorganism in a medium containing fatty acid or its precursor and ammonia or an ammonium salt and recovering the salinomycins from the culture.

4,212,943

PRODUCTION OF BACTERIAL CELL AGGREGATE

Gerald B. Borglum, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 27, 1978, Ser. No. 890,500
Int. Cl.[2] C12K *1/00, 1/08*
U.S. Cl. 435—180 20 Claims

1. A process for producing an aggregate of *Streptomyces olivaceus* bacterial cells which comprises contacting a mass of *Streptomyces olivaceus* bacterial cells with a cross-linking reaction product of (1) a material selected from the class consisting of glutaraldehyde, cyanuric halide and combinations thereof and (2) a water-soluble cationic polymer obtained by the polymerization of an epihalohydrin with an alkylene polyamine having the formula $R_1R_2NRNH_2$ wherein R is a lower alkylene having from 2 to about 6 carbon atoms, and R_1 and R_2 are each a lower alkyl of from 1 to about 6 carbon atoms, the mole ratio of epihalohydrin to polyamine being from about 0.60:1 to about 2.7:1, said polymerization comprising reacting with the alkylene polyamine from about 50 to about 90 percent of the amount of epihalohydrin to be polymerized, allowing the reaction to continue until the reaction medium attains a substantially uniform viscosity, and reacting the remaining portion of the epihalohydrin incrementally to obtain the cationic polymer, the temperature of polymerization being from about 60° C. to about 120° C., and recovering the resulting aggregate.

4,212,944

PROCESS FOR PRODUCING NOCARDICIN A

Walter D. Celmer, New London; Liang H. Huang, East Lyme; Mark T. Jefferson, Waterford, all of Conn.; Hiroshi Maeda; Kozo Inoue, both of Chita, Japan, and Riichiro Shibakawa, Handa, Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,009
Int. Cl.[2] C12D *9/14*
U.S. Cl. 435—121 1 Claim

1. A process for producing nocardicin A which comprises aerobically propagating *Nocardiopsis atra* Huang sp. nov. ATCC 31511 in an aqueous nutrient medium containing a source of assimilable carbon and a source of assimilable nitrogen until a substantial amount of nocardicin A is obtained.

4,212,945

PROCESS FOR RECOVERING PROTEASE

Yuji Nonaka; Kiyotaka Oyama, and Heijiro Satoh, all of Shinnanyo, Japan, assignors to (Zaidanhojin) Sagami Chemical Research Center and Toyo Soda Manufacturing Co., Ltd., both of Tokyo, Japan

Filed May 18, 1978, Ser. No. 907,006
Claims priority, application Japan, May 23, 1977, 52-58827
Int. Cl.[2] C12N *9/48;* C07G *7/02*
U.S. Cl. 435—212 9 Claims

1. A process for recovering protease which comprises react-

ing a first amino acid whose amino group is protected with a protective group with a second amino acid whose carboxyl group is protected with a protective group in an aqueous medium in the presence of the protease to result in a peptide synthesis and to precipitate the addition compound of a dipeptide and said second C-terminal protected amino acid; dissolving the addition compound into the aqueous medium by adding a polar organic solvent which is miscible with water and separating an insoluble material from the resulting suspension by a solid-liquid separation to isolate the protease as the solid phase.

4,212,946

PROCESS FOR RECOVERING PROTEASE

Yuji Nonaka; Kiyotaka Oyama, and Heijiro Satoh, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd. and (Zaidanhojin) Sagami Chemical Research Center, both of Tokyo, Japan

Filed May 18, 1978, Ser. No. 907,203
Claims priority, application Japan, May 23, 1977, 52-58828
Int. Cl.[2] C12N *9/48*; C07G *7/02*
U.S. Cl. 435—212 **9 Claims**

1. A process for recovering protease which comprises reacting a first amino acid whose amino group is protected with a protective group with a second amino acid whose carboxyl group is protected with a protective group in an aqueous medium in the presence of the protease to result in a peptide synthesis and to deposit as a precipitate the addition compound of a dipeptide and said second C-terminal protected amino acid; dissolving said addition compound by adding an organic solvent to a precipitate separated from the reaction mixture and isolating the protease from said organic solvent.

4,212,947

METHOD FOR OBTAINING MYCELIUM FROM THE GENUS POLYPORUS

Atanas K. Torev, Plovdiv, Bulgaria, assignor to DSO "HRANMASH", Stara Zagora, Bulgaria

Continuation-in-part of Ser. No. 687,817, May 19, 1976, abandoned. This application Feb. 17, 1978, Ser. No. 878,959
Claims priority, application Bulgaria, May 22, 1975, 30055
Int. Cl.[2] C12N *1/14*; C12R *1/645*
U.S. Cl. 435—254 **6 Claims**

1. A method for obtaining mycelium from a strain of polyporus genus selected from the group consisting of cultivated fungi having essentially all the characteristics of *Polyporus squamosus*-PS 64-103 and PS 24-44 and *Polyporus brumalis* PB 33-48, which comprises submerged cultivation of said strain of fungi on a nutrient media containing carbohydrate, nitrogen and phosphorus sources and then harvesting said mycelium.

4. A method for obtaining mycelium from a strain of polyporus genus selected from the group consisting of cultivated fungi having essentially all the characteristics of *Polyporus squamosus*-PS 64-103 and PS 24-44 and *Polyporus brumalis* PB 33-48, which comprises submerged cultivation of said strain of fungi on a nutrient media containing carbohydrate, nitrogen and phosphorus sources at a temperature of 22° to 50° C., a pH from 4.5 to 7.5, and 1 m^3 of nutrient media per minute, whereby there is a rapid increase in the protein concentration of the fungi mycelium, and afterward isolating said mycelium.

4,212,948

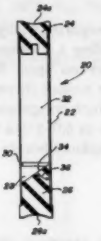
APPARATUS FOR DETECTING MICROBIAL PATHOGENS EMPLOYING A CUSHIONING AGENT

Gordon L. Dorn, Dallas, Tex., assignor to J. K. and Susie L. Wadley Research Institute and Blood Bank, Dallas, Tex.

Division of Ser. No. 739,274, Nov. 5, 1976, Pat. No. 4,131,512. This application Oct. 18, 1978, Ser. No. 952,339
Int. Cl.[2] C12M *1/24*
U.S. Cl. 435—296 **22 Claims**

1. An article used for the concentration of microbial pathogens from a sample fluid comprising:

an enclosed centrifugation receptacle sealably closed with injectable closure means, the interior of said receptacle comprising an evacuated spaced maintained at a lower than atmospheric pressure, adjacent a high density, nontoxic to microbial organisms, water immiscible, hydrophobic liquid cushioning agent capable of collecting substantially all of the microbial pathogens which pass out of



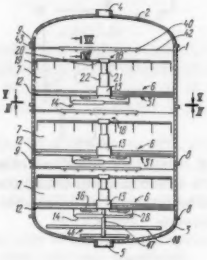
suspension from said sample fluid without a loss of said microbial pathogens to interstitial spaces present in said centrifugation receptacle and wherein the density of the liquid cushioning agent is sufficient so as not to be supported by a mixture of a sample fluid and a treating fluid therefore.

4,212,949

APPARATUS FOR CULTIVATING MICROORGANISMS

Valentin G. Kozhemyakin, Leninsky prospekt, 85, korpus 6, kv. 45; Kalust A. Kaluniants, mikroraion Kapotnya, kvartal 4, 3, kv. 34; Lidia S. Losyakova, prospekt Mira, 89, kv. 181; Leonid I. Golger, Leningradsky prospekt, 43, korpus 9, kv. 31; Leonid F. Ivanov, ulitsa Marshala Birjuzova, 17, kv. 33, and Raisa G. Kozlova, ulitsa Nagornaya, 34, korpus 43, kv. 14, all of Moscow, U.S.S.R.

Filed Aug. 21, 1978, Ser. No. 935,271
Int. Cl.[2] C12M *1/06*
U.S. Cl. 435—315 **12 Claims**



1. An apparatus for cultivating microorganisms, comprising:

a vertical cylindrical vessel;

a top port for charging a seeded granular medium into said cylindrical vessel;

a bottom port for discharging the culture from said cylindrical vessel;

horizontal partitions separating said cylindrical vessel, into vertical sections,

said horizontal partitions being made in the form of partially overlapping circular sectors and having perforation in the form of slots said sectors being moveable relative to each other in a horizontal plane;

a means for shifting said components in a horizontal plane so that, when said medium is being charged into one of said sections, said components form a solid plate, while, during

discharge of the culture from said section, a passage is provided for downward movement of the culture, said means being located under said partition;

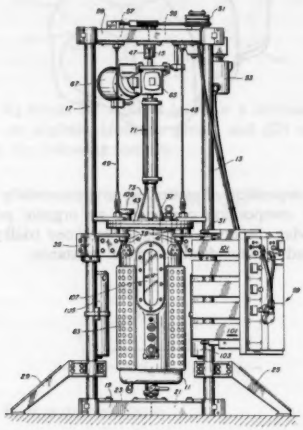
a plurality of loosening means provided in said vessel, each being located in one of said sections coaxially therewith; each being adapted to comb the contents of a section to keep them loose and means for introducing and letting out air from each compartment.

4,212,950

FERMENTING APPARATUS

Robert P. Adams, Walden, N.Y., assignor to The Virtis Company, Inc., Gardiner, N.Y.

Filed May 8, 1978, Ser. No. 903,594
Int. Cl.[2] C12M *1/02;* **195** *127;139;142;143*
U.S. Cl. 435—316 **6 Claims**



6. A fermenting apparatus comprising:

a fermentation pressure vessel;

a dimpled outer jacket of relatively light gauge material surrounding a relatively large proportion of said pressure vessel;

a closed heat transfer system including the space between said jacket and said pressure vessel;

pumping means to force a pressurized heat transfer fluid through said heat transfer system, said heat transfer fluid passing between said jacket and said pressure vessel to provide a desired temperature in the interior of said pressure vessel;

three vertical mounting columns interconnected at the bottom ends and having suitable base supports, said pressure vessel being secured to said mounting columns to rigidly mount said pressure vessel at a spaced interval above the horizontal base area;

removable modular control elements attached to said mounting columns in an easily accessible area to provide variable control of temperature and pressure conditions in the fermenting apparatus;

a first heat exchanger to heat said heat transfer fluid mounted on said mounting columns;

a second heat exchanger to cool said heat transfer fluid mounted on said mounting columns, said first and second heat exchangers connected in series with said pumping means to provide a continuous temperature control for said heat transfer fluid and hence said pressure vessel;

a removable lid secured to the top of said pressure vessel to selectively permit access to the interior of said pressure vessel;

three horizontal support members interconnecting said mounting columns above said pressure vessel;

three cables connected to said lid of said pressure vessel at spaced points thereon;

a common pulley for said cables mounted on said horizontal support members;

a pulley motor mounted on said support members, said pulley motor being operable to raise and lower said lid;

a drive motor to drive impeller blades in said pressure vessel;

a gear box cooperating with said drive motor to drive said impeller blades, said drive motor and said gear box secured to one of said mounting columns by a common mounting bracket which is pivotable to clear the space above said pressure vessel to permit maximum displacement of said lid during removal;

a drive shaft for the impeller blades in said pressure vessel extending through said removable lid of said pressure vessel; and

a removable drive linkage between said drive shaft and said gear box, said drive linkage being removed during the opening of said lid.

4,212,951

PROCESS FOR THE ISOLATION OF POLYARYLENE ESTERS

Senzo Shimizu, Odawara; Isao Nomura, Hiratsuka; Motohachi Usui, Odawara, and Masahiro Harada, Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,441
Claims priority, application Japan, Nov. 29, 1977, 52-143075
Int. Cl.[2] C08G *63/72, 63/74*
U.S. Cl. 528—495 **13 Claims**

1. A process for the isolation of particulate polyarylene esters having good thermal stability and hydrolytic stability, which comprises adding to a solution of a polyarylene ester in an organic solvent a poor solvent for the polyarylene ester at least in an amount such that said solution reaches a cloud point, followed by subjecting said mixed solution to an aging treatment in which the mixed poor solvent-containing solution is allowed to stand with or without stirring whereby the polyarylene ester precipitates as solids, characterized in that said poor solvent is a mixed poor solvent consisting of 5–95% by weight of an aliphatic alcohol having 1–5 carbons and another poor solvent for the polyarylene ester selected from the class consisting of ketones, esters, aromatic hydrocarbons and aliphatic hydrocarbons, the amount of said mixed poor solvent added being within the range of 100–200% by weight of the amount such that said solution reaches the cloud point and not exceeding the amount of said solution.

4,212,952

N,N,N',N'-TETRAMETHYL-α,ω-POLYMETHLENEDIAMINES AS CATALYSTS FOR THE PREPARATION OF URETHANE FOAMS

Gerald J. Murphy, Wappingers Falls, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,743
Int. Cl.[2] C08G *18/18*
U.S. Cl. 521—112 **11 Claims**

1. In the process for the preparation of a urethane foam which comprises reacting an aromatic polyisocyanate with polyol in the presence of a catalyst and a blowing agent, the improvement which comprises conducting the reaction in the presence of a catalytic amount of an N,N,N,N'-tetramethyl-α,ω-polymethylenediamine compound of the formula $(CH_3)_2NCH_2(CH_2)_nCH_2CH_2N(CH_3)_2$ wherein n is 4, 3, 2, 1, or 0.

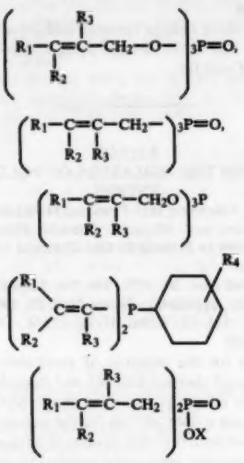
4,212,953

FIRE-RETARDANT POLYURETHANE FOAMS

Martin B. Sheratte, Canoga Park, and Lydia H. Simanyi, Santa Ana, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 1, 1978, Ser. No. 938,988
Int. Cl.[2] C08G 18/14, 18/38, 18/62
U.S. Cl. 521—137 20 Claims

1. A fire resistant polyurethane foam composition comprising an interpenetrating network of polyether based urethane polymer and phosphorus-containing polymer, the phosphorus being present as a pendant group on said last mentioned polymer, said phosphorus-containing polymer being derived from a monomer selected from the group consisting of:



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of H, alkyl of from about 1 to about 20 carbon atoms, aryl of from 6 to about 24 carbon atoms, and halogen; and X is vinyl or allyl.

4,212,954

POLYURETHANE FOAM PRODUCT FOR AN IMPACT ABSORBER

Takao Nomura, Nagoya; Kunihiko Terasaka, and Isao Sakata, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Kaisha, Japan

Filed Aug. 9, 1977, Ser. No. 823,193
Claims priority, application Japan, Aug. 10, 1976, 51-95058
Int. Cl.[2] C08G 18/14
U.S. Cl. 521—159 5 Claims

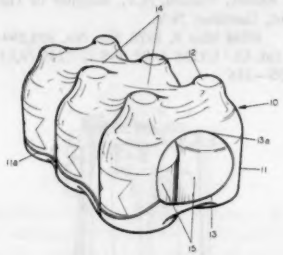
1. A polyurethane foam product useful as a ideal impact absorber prepared by miximg a high molecular weight polymer polyol (a) having a molecular weight in the range 6000–8000 and a corresponding OH value in the range 14–20, a low molecular weight polyol (b) having an OH value in the range 450–1850, an organic polyisocyanate (c), water and a catalyst and permitting the resulting mixture to react with the formation of said polyurethane foam product.

4,212,955

DEGRADABLE PLASTIC COMPOSITION CONTAINING ORTHO ESTER

John W. Tobias, Perrysburg, and Lynn J. Taylor, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 865,046, Dec. 27, 1977, which is a continuation of Ser. No. 731,486, Oct. 12, 1976, abandoned, which is a continuation of Ser. No. 288,750, Sep. 13, 1972, abandoned. This application Jan. 19, 1978, Ser. No. 870,689
Int. Cl.[2] C08K 5/06
U.S. Cl. 525—5 17 Claims



1. As a composition of matter, an environmentally degradable plastic composition comprising an organic polymeric material having dispersed therein at least one trialkyl ortho ester as a readily autoxidizable organic substance.

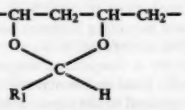
4,212,956

OLEFIN-VINYL ALCOHOL-VINYL ACETAL COPOLYMERS, PROCESS FOR PREPARATION THEREOF AND LAMINATE STRUCTURES INCLUDING SAID COPOLYMERS

Tadahiko Katsura, Yokohama, Japan, assignor to Toyo Seikan Kaisha Limited, Tokyo, Japan

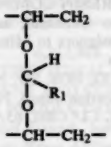
Filed Nov. 22, 1977, Ser. No. 854,007
Claims priority, application Japan, Nov. 25, 1976, 51-140749; Nov. 25, 1976, 51-140750
Int. Cl.[2] C08F 16/06, 216/06, 8/00
U.S. Cl. 525—60 3 Claims

1. A packaging film material having excellent hot water resistance and excellent oxygen barrier property in combination, which consists essentially of an olefinvinyl alcohol-vinyl acetal copolymer consisting essentially of 20 to 40 mole % of olefin units and 80 to 60 mole % of vinyl units, 50 to 98 mole % of the vinyl units being vinyl alcohol units and 2 to 50 mole % of the vinyl units being at least one kind of vinyl acetal units selected from the group consisting of (A) units represented by the following formula:



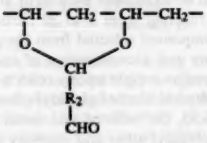
wherein R_1 stands for a hydrogen atom or a molovalent aliphatic, aromatic or aliphatic-aromatic group,

(B) units represented by the following formula:

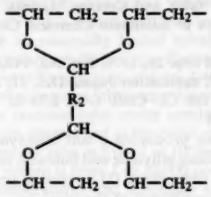


wherein R_1 is as defined above,

(C) units represented by the following formula:



wherein R_2 stands for a direct bond or a divalent aliphatic, aromatic or aliphatic-aromatic group, and (D) units represented by the following formula:



wherein R_2 is as defined above.

4,212,957

PLASTIFIERS, METHOD OF PREPARATION AND PVC COMPOSITIONS CONTAINING SAME

John W. Hirzy, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1977, Ser. No. 864,553

Int. Cl.² C08L *27/00, 75/06*

U.S. Cl. 525—131 **15 Claims**

1. An ordered-random, solid, block copolyesterurethane having from about 15 to about 50 percent by weight amorphous end blocks and from about 85 to about 50 percent by weight random copolymer center block having from about 20 to about 95 percent crystallinity based on heat of fusion, said copolyesterurethane having from about 25 to about 50 percent crystallinity based on heat of fusion, said random copolymer having randomly alternating amorphous and semi-crystalline prepolymer blocks coupled via ester or urethane linkages, said semi-crystalline prepolymer being prepared by reacting dicarboxylic acid with a mixture of non-crystallizing dihydroxy compound and crystallizing dihydroxy compound in a ratio of non-crystallizing dihydroxy compound to crystallizing dihydroxy compound from about 0.1 to about 0.5, and said end blocks and center block being isocyanate-coupled.

3. Composition comprising a halogen-containing polymer and a copolyesterurethane of claim 1.

4,212,958

GRAFT POLYBLEND FLOW IMPROVERS FOR PVC

John C. Falk, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 690,112, May 26, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,585

Int. Cl.² C08L *23/00*

U.S. Cl. 525—310 **3 Claims**

1. A polyblend composition consisting of from 50 to 90% by weight of a rubbery substrate selected from the group consisting of hydrogenated homopolymers of 1,3-butadiene having greater than 30% 1,2-polymerized units and hydrogenated copolymers of 1,3-butadiene with up to 60% by weight styrene, from 50 to 3.7% by weight of an acrylate grafting monomer selected from the group consisting of methyl acrylate, ethyl acrylate, methyl methacrylate and mixtures thereof, and from 0 to 35% by weight of a vinyl aromatic grafting monomer selected from the group consisting of styrene, alpha methyl styrene, vinyl toluene and mixtures thereof, wherein said grafting monomers are graft polymerized in the presence of said rubbery substrate, and wherein said rubbery substrate contains no detectable ethylenic unsaturation.

4,212,959

HEAT RESISTANT RESIN COMPOSITION

Akira Fukami, and Hiroyuki Nakajima, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

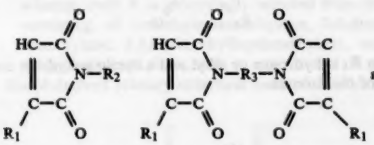
Filed May 9, 1978, Ser. No. 904,266

Int. Cl.² C08L *63/00*

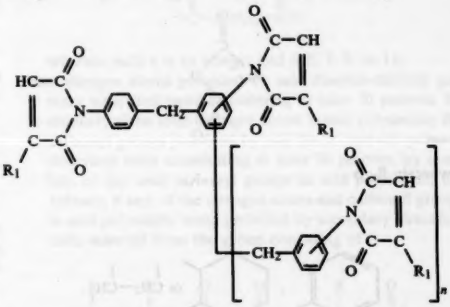
U.S. Cl. 525—524 **13 Claims**

1. A heat resistant resin composition, comprising:

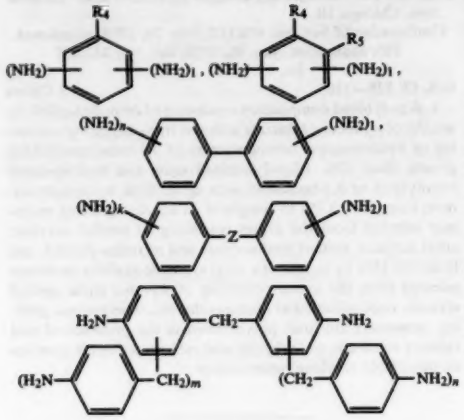
(a) 80 to 5 parts by weight of a mixture of (i) 0 to 95 parts by weight of a first maleimide compound selected from the group consisting of



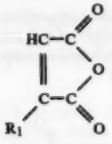
and



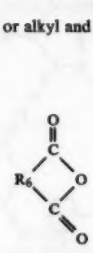
wherein R_1 is alkyl, R_2 is a monovalent organic group, R_3 is a divalent organic group and n is an average of 0.5 to 5 and (ii) 100 to 5 parts by weight of a second maleimide compound formed by reacting an aromatic amine selected from the group consisting of aniline, o-toluidine, p-toluidine, chloroaniline, bromoaniline, aminochlorotoluene, aminoxylene, aminoethylbenzene, aminodiphenylether, aminodiphenylsulfone, aminodiphenylester, aminodiphenylsulfide,



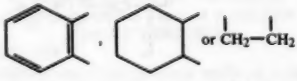
wherein R_4 and R_5 represent alkyl, chlorine or bromine; Z is alkylene, —O—, —NH—, —S—, —SO_2—, —COO—, —CONH—, —OCOO— or —COOCO—; k+1 represents an integer of 1 to 4 and m and n each represents 0 or an integer of 1 to 5 and mixtures thereof with a maleic anhydride compound of the formula:



wherein R_1 is hydrogen or alkyl and a cyclic anhydride compound of the formula:



wherein R_6 is



the weight ratio of said maleic anhydride compound to said cyclic anhydride compound ranging from 2:8 to 8:2 and the amounts of said aromatic amine and maleic anhydride compound and cyclic anhydride being such that the total amount of anhydride is the stoichiometric amount necessary to react with the amino groups of said aromatic amine; and

(b) 20 to 95 parts by weight of a diepoxy compound.

4,212,960

EPOXY RESIN COMPOSITION

Osamu Hayashi; Kazuo Okahashi, and Hiroshi Ono, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,947
Claims priority, application Japan, Nov. 5, 1977, 52-132904
Int. Cl.[2] C08L *63/00*
U.S. Cl. 525—524 **10 Claims**

1. An epoxy resin composition for flexible products, which comprises: (a) from 40 to 80 parts by weight of a liquid epoxy compound having at least two epoxy groups in one molecule; (b) from 60 to 90 parts by weight of an acid anhydride hardener; and (c) from 60 to 20 parts by weight of a reaction product obtained by reacting from 1 to 30 parts by weight of a phenoxy resin component selected from the group consisting of a phenoxy resin and a combination of said phenoxy resin with a high molecular weight epoxy resin with 100 parts by weight of a monohydric alcohol glycidyl ether and a metal salt of a carboxylic acid, the ratio of said metal salt to the total amount of monoglycidyl ether and phenoxy resin component ranging from 0.2 to 1.0%.

4,212,961

PROCESS FOR PRODUCING SOFT RESINS

Akio Kobayashi, Suita, and Kentaro Mashita, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 28, 1978, Ser. No. 946,612
Claims priority, application Japan, Oct. 11, 1977, 52-122079
Int. Cl.[2] C08F *4/66, 210/02*
U.S. Cl. 526—151 **10 Claims**

1. A process for producing a soft copolymer which comprises copolymerising ethylene and butene-1 in the presence of a catalyst system comprising (1) a reaction product of (A) an organic titanium compound of the formula,

$$Ti(OR)_nX_{4-n}$$

wherein R is a hydrocarbon residue having 1 to 10 carbon atoms, X is a halogen atom and n is a number satisfying the equation $0<n\leqq 4$, and (B) organomagnesium compound, and (2) an organo-aluminum compound of the formula,

$$AlR_{m'}X_{3-m'}$$

wherein R′ is a hydrocarbon residue having 1 to 20 carbon atoms, X′ is a halogen atom and m is a number satisfying the equation $0<m\leqq 3$, the content of butene-1 in the copolymer being 10 to 30 mole %.

4,212,962

EPSILON-CAPROLACTAM BLOCKED POLYISOCYANATES

Karl Schmitt; Josef Disteldorf, both of Herne, and Felix Schmitt, Wanne-Eickel, all of Fed. Rep. of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Fed. Rep. of Germany

Continuation of Ser. No. 785,153, Apr. 6, 1977, abandoned, which is a continuation of Ser. No. 630,573, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 441,785, Feb. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 223,700, Feb. 4, 1972, Pat. No. 3,822,240. This application Feb. 28, 1978, Ser. No. 881,996
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1971, 2105777
Int. Cl.[2] C08G *18/80;* **C07D** *211/40*
U.S. Cl. 528—45 **3 Claims**

1. Epsilon-caprolactam blocked polyisocyanates in particulate form, said polyisocyanates being selected from the group of isophorone diisocyanate and the reaction product of isopho-

rone diisocyanate and a polyol, said reaction product containing at least two isocyanate groups.

4,212,963

POLYBUTYLENE TEREPHTHALATES HAVING A LOW CARBOXYL CONTENT AND CONTINUOUS PROCESS FOR THE PRODUCTION THEREOF

Günter Lehr, and Rudolf Binsack, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 829,384, Aug. 31, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 968,892

Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719969; Aug. 3, 1977, 2734924

Int. Cl.[2] C08G *63/18*

U.S. Cl. 528—272 6 Claims

1. Polybutylene terephthalates having an intrinsic viscosity (determined at 25° C. on a 0.5% by weight solution in a 1:1 by weight mixture of phenol and tetrachloroethane) of from 0.2 to 1.4 dl/g, a molecular non-uniformity of below 1.10, and a carboxyl group content equal to or below 0.07% by weight, based on the polybutylene terephthalate, determined at an intrinsic viscosity of 1.0 dl/g.

3. A continuous process for the production of polybutylene terephthalate which comprises transporting a molten reaction mixture of terephthalic acid mono- and/or bis-(hydroxybutyl) ester or low viscosity polybutylene terephthalate at 160° to 300° C., together with a heated inert gas, in a diphasic annular stream through an externally heated spiral reaction tube (of substantially constant pitch) having a diameter of from 3 to 100 mm and a diameter/length ratio of from 1:400 to 1:2000 by the maintenance of a pressure difference between the beginning and end of the reaction tube, under conditions such that the absolute pressure, determined at the point of entry of the reaction mixture into the tube, is from 1 to 100 bar and the viscosity of the annular stream is from 1 to 10,000 poises (determined at the reaction temperature), and a circular stream between the surface of the melt and the wall of the tube is produced by the curvature of the tube and a stream of gas flowing at a velocity of from 20 to 300 m/sec to accelerate the transport of material between the melt and the inert gas, whereby reaction takes place in the liquid phase and/or at the melt/gas interface.

4,212,964

NORMALLY SOLID, MOLDABLE POLYAMIDE FROM BRANCHED CHAIN DIAMINE AND ALIPHATIC DICARBOXYLIC ACID

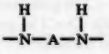
Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 25, 1975, Ser. No. 635,004

Int. Cl.[2] C08G *69/26*

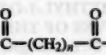
U.S. Cl. 528—340 27 Claims

1. A normally solid, moldable polyamide comprising: diamine-derived primary structural units of the formula



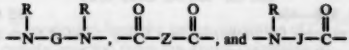
wherein each A is individually selected from the group consisting of 5-methylnonamethylene, 2,4-dimethyloctamethylene, 2,4,6-trimethylheptamethylene, and 4-isopropylheptamethylene; and

diacid-derived primary structural units of the formula



wherein each n is an integer and is 4, 6, 8, or 10;

the nitrogen atoms provided by said diamine-derived primary structural units constituting at least 70 percent, by number, of the total nitrogen atoms in said polyamide; the carbonyl groups provided by said diacid-derived structural units constituting at least 70 percent, by number, of the total carbonyl groups in said polyamide; the balance, if any, of the nitrogen atoms and carbonyl groups in said polyamide being provided by secondary structural units selected from the group consisting of



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms per radical, each G is a divalent acyclic hydrocarbon radical having 6 to 16 carbon atoms, each Z is a divalent hydrocarbon radical having from 5 to 12 carbon atoms and each J is a divalent acyclic hydrocarbon radical having from 5 to 13 carbon atoms.

4,212,965

POLYAMIDES WITH ELASTOMERIC CHARACTER FROM 5-METHYLNONAMETHYLENE DIAMINE

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

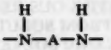
Filed Nov. 25, 1975, Ser. No. 635,006

Int. Cl.[2] C08G *69/26*

U.S. Cl. 528—340 29 Claims

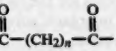
1. A normally solid, moldable polyamide with elastomeric character comprising:

diamine-derived primary structural units of the formula



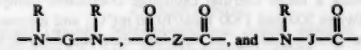
wherein each A is individually selected from the group consisting of 5-methylnonamethylene, 2,4-dimethyloctamethylene, 2,4,6-trimethylheptamethylene, and 4-isopropylheptamethylene; and

diacid-derived primary structural units of the formula



wherein each n is an integer and is 5, 7, 9, or 11;

the nitrogen atoms provided by said diamine-derived primary structural units constituting at least 70 percent, by number, of the total nitrogen atoms in said polyamide; the carbonyl groups provided by said diacid-derived primary structural units constituting at least 70 percent, by number, of the total carbonyl groups in said polyamide; the balance, if any, of the nitrogen atoms and carbonyl groups in said polyamide being provided by secondary structural units selected from the group consisting of



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms per radical, each G is a divalent acyclic hydrocarbon radical having from 6 to 16 carbon atoms, each Z is a divalent hydrocarbon radical having from 4 to 12 carbon atoms, and each J is a divalent acyclic hydrocarbon radical having from 5 to 13 carbon atoms.

4,212,966

PROCESS OF PREPARING FINELY DIVIDED THERMOPLASTIC RESINS

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers & Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 934,641, Aug. 17, 1978, abandoned. This application Mar. 28, 1979, Ser. No. 24,760

Int. Cl.[2] **536** *56;* **C08F** *6/00*

U.S. Cl. 528—486 **25 Claims**

1. A process for preparing in a finely divided form a solid organic polymeric thermoplastic resin which comprises:

(a) agitating a mixture of the resin while in the molten state, a dispersion-forming amount of water, and a dispersing system comprising a dispersing amount of a surface active agent which is normally incapable of forming a dispersion of said resin in the absence of strong base in combination with a dispersion promoting amount of strong base to provide an aqueous dispersion of the resin said dispersion being formed in the absence of discharge of the hot dispersion through a restricted orifice into a zone of reduced pressure; and,

(b) cooling the dispersion to provide solid particles of resin.

4,212,967

PROCESS FOR CONTINUOUS RECOVERY OF SOLID POLYCARBONATE FROM SOLUTIONS THEREOF IN ORGANIC SOLVENTS

Gabriele Govoni, Renazzo; Giovanni Di Drusco, Milan; Canzio Corazzari, Pilastri, and Pierluigi Guardigli, Ferrara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 22, 1979, Ser. No. 14,161

Claims priority, application Italy, Feb. 22, 1978, 20509 A/78

Int. Cl.[2] **C08G** *63/72*

U.S. Cl. 528—500 **6 Claims**

1. A continuous process for the recovery of polycarbonates from solutions thereof in organic solvents, said process consisting of the following phases:

(a) feeding of the polycarbonate solution at a temperature comprised between 0° and 120° C., through one or more feeding ducts into the narrow zone or the diverging stretch of a DeLaval-type nozzle run through by water vapor at respectively sonic or ultrasonic speed, maintaining feeding ratios vapor/polycarbonate solution comprised between 1 and 5 kg of vapor per kg of solution, with formation of a dispersion of particles of polycarbonate in the vapor;

(b) continuous feeding of the dispersion resulting from phase (a) to a pipe-in-pipe heat exchanger, directly connected to the diverging stretch of the nozzle, said heat exchanger having a mean thermal exchange coefficient comprised between 500 and 1500 Kcal/hr.sq.mt°C., and a cross-section growing along its development, and in which exchanger the dispersion, maintained at 100°–140° C. for dwell times comprised between 0.05 and 5 seconds, has a flow rate of at least 90 mt/sec. in the initial stretch and from 10 to 50 mt/sec. in its final stretch; thereby obtaining solid minute polycarbonate particles dispersed in the vapor phase consisting of the vapors of the solvent and of water vapor, and separating the solid polycarbonate particles from the vapors.

4,212,968

PROSTAGLANDIN DERIVATIVES

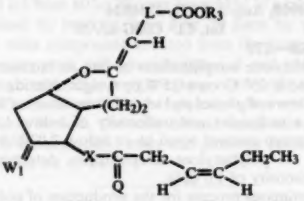
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,982

Int. Cl.[2] **C07D** *311/02*

U.S. Cl. 542—426 **14 Claims**

1. A compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;

wherein L is

—$(CH_2)_d$—$C(R_2)_2$,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, wherein R_3 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

(g) (p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(h) (p—Ph)—NH—CO—(p—Ph),

(i) —(p—Ph)—NH—CO—CH_3,

(j) —(p—Ph)—NH—CO—NH_2,

(k) —(p—Ph)—CH=N—NH—CO—NH_2,

(l) β-naphthyl, or

(m) $CH(R_{11})$—CO—R_{10},

wherein (p—Ph) is para-phenyl or inter-para-phenylene; wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or

(n) a pharmacologically acceptable cation; wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH wherein R_8 is hydrogen or alkyl or one to 4 carbon atoms, inclusive; and

(1) trans-CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—; including the lower alkanoates thereof.

4,212,969

1-HYDROXYMETHYL-1-OXO-PROSTANE DERIVATIVES OF THE A_2 SERIES

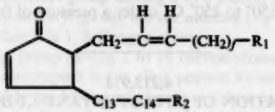
Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 8, 1977, Ser. No. 858,579

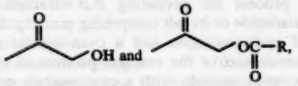
Int. Cl.[2] **C07C** *177/00*

U.S. Cl. 542—429 **189 Claims**

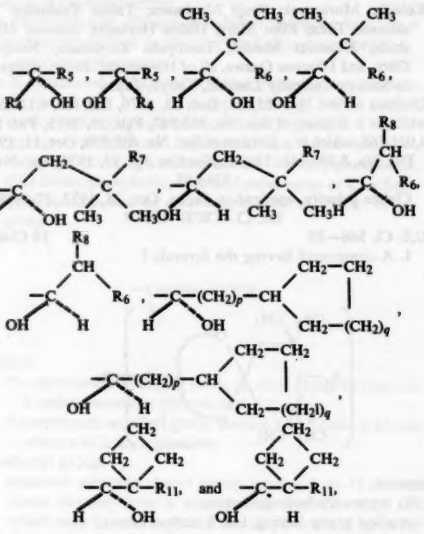
1. An optically active compound of the formula:



wherein f is an integer from 2 to 4, inclusive; C_{13}–C_{14} is selected from the group consisting of ethylene and trans-vinylene; R_1 is a radical selected from the group consisting of

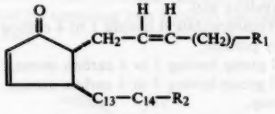


wherein R is selected from the group consisting of C_1–C_4 alkyl; R_2 is a moiety selected from the group consisting of

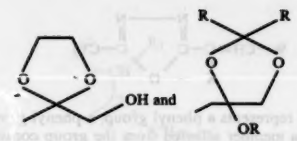


wherein R_4 is selected from the group consisting of hydrogen and methyl, R_5 is selected from the group consisting of C_4–C_7 alkyl, R_6 is selected from the group consisting of C_3–C_5 alkyl, R_7 is selected from the group consisting of C_2–C_4, R_8 is selected from the group consisting of C_1–C_2 alkyl, R_{11} is selected from the group consisting of C_3–C_7 alkyl, p is an integer from 0 to 3, and q is 1 or 2; the racemic mixture thereof; and the mirror image thereof.

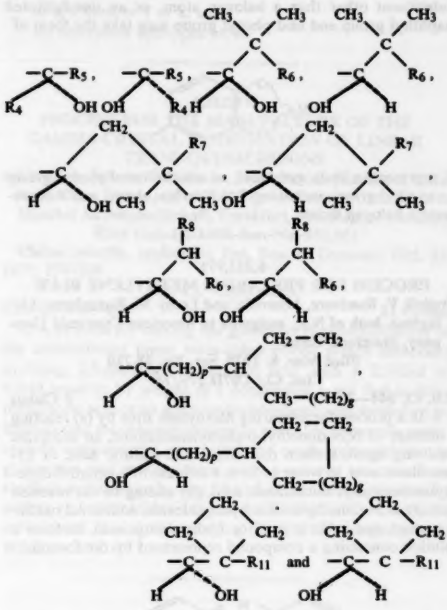
34. An optically active compound of the formula:



wherein f is an integer from 2 to 4, inclusive; C_{13}–C_{14} is selected from the group consisting of ethylene and transvinylene; R_1 is a radical selected from the group consisting of



wherein R is selected from the group consisting of C_1–C_4 alkyl; R_2 is a moiety selected from the group consisting of



wherein R_4 is selected from the group consisting of hydrogen and methyl, R_5 is selected from the group consisting of C_4–C_7 alkyl, R_6 is selected from the group consisting of C_3–C_5 alkyl, R_7 is selected from the group consisting of C_2–C_4, R_8 is selected from the group consisting of C_1–C_2 alkyl, R_{11} is selected from the group consisting of C_3–C_7 alkyl, p is an integer from 0 to 3, and q is 1 or 2; the racemic mixture thereof and the mirror image thereof.

4,212,970

2-HALOMETHYL-5-VINYL-1,3,4-OXADIAZOLE COMPOUNDS

Masayuki Iwasaki, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

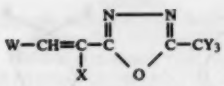
Filed Nov. 22, 1978, Ser. No. 962,851

Claims priority, application Japan, Nov. 28, 1977, 52-142473; Aug. 8, 1978, 53-96306

Int. Cl.[2] C07D *271/10, 407/02*

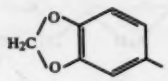
U.S. Cl. 542—455 **11 Claims**

1. Compounds represented by the following general formula (I):



(I)

wherein W represents a phenyl group, a phenyl group substituted with a member selected from the group consisting of a halogen atom, a nitro group, a cyano group, an alkyl group containing 1 to 3 carbon atoms and an alkoxy group containing 1 to 4 carbon atoms, with the number of the substituents being 1 or 2 when said substituent is a halogen atom and 1 when said substituent other than a halogen atom, or an unsubstituted naphthyl group and said phenyl group may take the form of



X represents a hydrogen atom, an unsubstituted phenyl group or an alkyl group containing 1 to 3 carbon atoms, and Y represents a halogen atom.

4,212,971

PROCESS FOR PREPARING METHYLENE BLUE

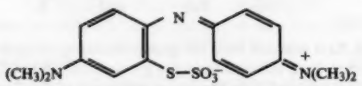
Fredrik V. Randvere, Manville, and Leroy M. Konzelman, Livingston, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 8, 1979, Ser. No. 18,710

Int. Cl.[2] C07D *279/18*

U.S. Cl. 544—37 **6 Claims**

1. In a process for preparing Methylene Blue by (a) reacting a mixture of N,N-dimethyl-p-phenylenediamine, an inorganic oxidizing agent, sodium thiosulfate, and sulfuric acid, or hydrochloric acid, in water to form a solution of 2-amino-5-dimethylaminophenyl thiosulfonic acid, (b) adding to the reaction mixture N,N-dimethylaniline hydrochloride, additional oxidizing agent, and sulfuric acid, or hydrochloric acid, to form a solution containing a compound represented by the formula:



(c) treating the reaction mixture with a mixture of copper sulfate and said oxidizing agent and heating the reaction mixture until the formation of Methylene Blue is completed, and recovering Methylene Blue therefrom, the improvement which comprises: using about 0.8 to 5.0 mole of manganese dioxide as the oxidizing agent in the substantial absence of a dichromate and in the presence of at least 0.017 mole of copper sulfate per mole of N,N-dimethyl-p-phenylenediamine initially charged.

4,212,972

PREPARATION OF CIS-2,6-DIMETHYLMORPHOLINE

Norbert Goetz, Worms; Walter Himmele, Walldorf, and Leopold Hupfer, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,200

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830998

Int. Cl.[2] C07D *265/30*

U.S. Cl. 544—106 **2 Claims**

1. A process for the preparation of cis-2,6-dimethylmorpholine by isomerizing trans-2,6-dimethylmorpholine, wherein trans-2,6-dimethylmorpholine is isomerized in the presence of hydrogen and of a catalyst which contains one or more metals of group VIII or group Ib of the periodic table of the elements, or contains a mixture of these, at from 120° to 280° C., especially from 150° to 250° C., under a pressure of from 1 to 200 bar.

4,212,973

PREPARATION OF CYCLOPENTANE-1,1-DIACETIC ACID AND INTERMEDIATE

Raymond D. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,649

Int. Cl.[2] C07D *211/58*

U.S. Cl. 546—16 **5 Claims**

1. The process for preparing β,β-tetramethylene-α,α'-dicyanoglutarimide or its salt comprising reacting the reaction product of cyclopentanone and a cyanoacetate ester with cyanoacetamide and/or the reaction product of cyclopentanone and cyanoacetamide with a cyanoacetate ester, in the presence of a basic catalyst.

4,212,974

PIPERIDINE DERIVATIVES

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayou Osawa, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

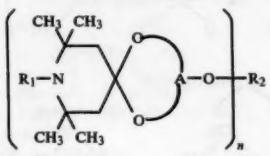
Division of Ser. No. 753,691, Dec. 23, 1976, Pat. No. 4,125,533, which is a division of Ser. No. 553,087, Feb. 26, 1975, Pat. No. 4,016,168, which is a division of Ser. No. 405,570, Oct. 11, 1973, Pat. No. 3,899,464. This application Jul. 14, 1978, Ser. No. 924,665

Claims priority, application Japan, Oct. 26, 1972, 47-107408

Int. Cl.[2] C07D *405/04*

U.S. Cl. 546—19 **10 Claims**

1. A compound having the formula I



(I)

wherein,

R_1 represents hydrogen atom,

an alkyl group having 1 to 8 carbon atoms,

a substituted alkyl group having 1 to 3 carbon atoms in its alkyl moiety and selected from the group consisting of

a hydroxyalkyl,

an alkoxyalkyl having 1 to 4 carbon atoms in its alkoxy portion,

an alkanoyloxyalkyl having 2 to 18 carbon atoms in its alkanoyl portion,

an alkenoyloxyalkyl having 3 or 4 carbon atoms in its alkenoyl portion,

a benzoyloxyalkyl,

a cyanoalkyl,

a halogenoalkyl,

an epoxyalkyl, and

an alkoxycarbonylalkyl having 1 to 4 carbon atoms in its alkoxy portion,

an alkenyl group having 3 or 4 carbon atoms,

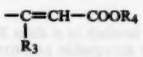
an alkynyl group having 3 or 4 carbon atoms,

benzyl group,

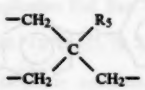
a benzyl group substituted with a halogen atom or a methyl group,

an alkanoyl or alkenoyl group, each having 2 to 8 carbon atoms,

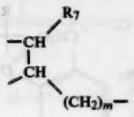
an alkoxycarbonyl group having 2 to 5 carbon atoms or benzoyloxycarbonyl group, n is the number 1 or 2, R_2 represents, when n is 1, hydrogen atom,
an alkanoyl group having 1 to 18 carbon atoms and which may be interrupted in the alkyl portion by sulfur atom,
an alkenoyl group having 3 to 6 carbon atoms, each of which alkanoyl or alkenoyl groups may be substituted by phenyl or phenyl substituted with alkyl having 1 to 4 carbon atoms and/or hydroxy,
a benzoyl or naphthoyl group which may be substituted with an alkyl or alkoxy group having 1 to 4 carbon atoms, a halogen atom or a hydroxy group,
furoyl group,
isonicotinoyl group,
nicotinoyl group,
morpholinocarbonyl group,
an alkyl group having 1 to 18 carbon atoms,
an alkynyl group having 3 or 4 carbon atoms,
benzyl group,
phenyl group,
a o-, m- or p-tolyl group,
a α- or β-naphthyl group,
an alkoxyalkyl or alkoxysulfonylalkyl group having 1 to 4 carbon atoms both in the alkyl and alkoxy portions,
2,3-epoxypropyl group,
an N-substituted carbamoyl or thiocarbaboyl group wherein the substituent is an alkyl group having 1 to 4 carbon atoms, a phenyl group or a cyclohexyl group,
a group derived from benzenesulfinic, benzenesulfonic, methanesulfonic, p-toluenesulfonic, diphenylphosphoric, C_{1-8} dialkylphosphoric, diphenylphosphorus or C_{1-8} dialkylphosphorus acid by removing a hydroxy group, or
a group



in which
R_3 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or phenyl, and
R_4 represents an alkyl group having 1 to 8 carbon atoms, when n is 2, R_2 represents
carbonyl group,
a saturated aliphatic diacyl group having 2 to 18 carbon atoms derived from a saturated dicarboxylic acid and which may be interrupted in the alkylene chain by sulfur atom,
an unsaturated aliphatic diacyl group having 4 to 6 carbon atoms derived from an unsaturated dicarboxylic acid,
terephthaloyl or isophthaloyl group,
an alkylene group having 2 to 6 carbon atoms,
an alkylene group having 4 to 6 carbon atoms,
an alkenylene group having 4 to 6 carbon atoms,
p-xylylene group,
an N-substituted dicarbamoyl group wherein the N-substituent is alkylene having 1 to 6 carbon atoms, phenylene, tolylene or methanediphenylene group, or
a group derived from sulfurous, sulfuric or phenylphosphorus acid by removing two hydroxy groups, A represents a group



or a group



wherein
R_5 represents hydrogen atom or an alkyl group having 1 to 3 carbon atoms,
m is a number 1 or 2, and
R_7 represents hydrogen atom.

4,212,975

PROCESS FOR THE MANUFACTURE OF THE GAMMA-CRYSTAL MODIFICATION OF LINEAR TRANS-QUINACRIDONE

Adolf Kroh, Selters; Otto Fuchs, Frankfurt am Main, and Ernst Spietschka, Idstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,661
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747508
Int. Cl.² C09B *48/00*
U.S. Cl. 546—49 **11 Claims**

1. A process for making the gamma-crystal modification of the unsubstituted linear trans-quinacridone which comprises cyclizing 2,5-dianilino-terephthalic acid with a 2,5-fold to 4-fold quantity by weight of a condensing agent that is polyphosphoric acid or an acidic polyphosphoric acid methyl ester, hydrolyzing the reaction mixture in water to form crude quinacridone agglomerates, separating the crude quinacridone agglomerates and mixing them with a solvent selected from alcohols and ketones having up to 6 carbon atoms, intensively milling the quinacridone agglomerates in admixture with the solvent and heating the resulting mixture to a temperature of 80° C. to 200° C.

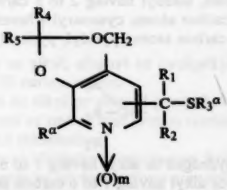
4,212,976

3,4α-DI-O-DERIVATIVES OF MERCAPTOMETHYLPYRIDINE AND PYRIDYLMETHYLDISULFIDE

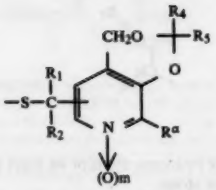
Tsung-Ying Shen, Westfield; Howard Jones, Holmdel; Dennis M. Mulvey, Milford, and Conrad P. Dorn, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 685,211, May 11, 1976, Pat. No. 4,057,637, which is a division of Ser. No. 470,231, May 16, 1974, Pat. No. 3,971,797, which is a continuation-in-part of Ser. No. 368,774, Jun. 15, 1973, abandoned. This application Sep. 20, 1977, Ser. No. 834,949
Int. Cl.² C07D *491/04*
U.S. Cl. 546—115 **3 Claims**

1. The compound of structural formula:



or pharmaceutically acceptable salt thereof, wherein R^a is C_{1-5} alkyl R_1 is hydrogen, C_{1-3} alkyl, or phenyl; R_2 is hydroogen or C_{1-3} alkyl; m is 0 or 1; $R_3{}^a$ is hydrogen or



and R_4 and R_5 are the same or different and each is hydrogen, C_{1-6} alkyl or phenyl, or taken together, R_4 and R_5 represent $=O$ or $=S$, with the proviso that if R_4 and R_5 are hydrogen, C_{1-6} alkyl or phenyl, then m is 1.

4,212,977

PROCESS FOR PREPARING N-CHLOROIMIDES

Ta-Sen Chou, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 20, 1978, Ser. No. 971,617
Int. Cl.[2] C07D *211/92, 209/48, 207/46*
U.S. Cl. 546—243 **4 Claims**

1. A process for preparing N-chlorophthalimide, N-chlorosuccinimide, or N-chloroglutarimide comprising contacting phthalimide, succinimide or glutarimide with chlorine at a temperature or from about −10° C. to about +50° C. under substantially non-aqueous conditions in the presence of poly(4-vinylpyridine)-divinylbenzene copolymer in a ratio by weight of said copolymer to phthalimide, succinimide, or glutarimide of between 1:1 and about 1:5, said copolymer containing between about 1% and about 10% cross linking.

4,212,978

PROCESS FOR THE CATALYTIC PRODUCTION OF 2-SUBSTITUTED PYRIDINES

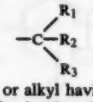
Peter Hardt, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

Continuation of Ser. No. 724,939, Sep. 20, 1976, abandoned. This application Mar. 22, 1978, Ser. No. 888,937
Claims priority, application Switzerland, Sep. 18, 1975, 12139/75
The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.
Int. Cl.[2] C07D *213/08*
U.S. Cl. 546—253 **8 Claims**

1. A process for the catalytic production of a 2-substituted pyridine which comprises reacting a cyano compound and acetylene in the presence of cobaltocene, which is a catalyst, said reaction being conducted at a pressure between 3 and 20 atmospheres of acetylene, and said cobaltocene not being converted to a different valence state during the process, whereby said cyano compound has the formula:

A—CN

wherein A is alkyl having 1 to 8 carbons, cycloalkyl having 3 to 9 carbon atoms, alkenyl having 2 to 8 carbon atoms, aryl having 6 to 10 carbon atoms, cyanoaryl wherein the aryl moiety has 6 to 10 carbon atoms, pyridyl, pyrimidyl or



wherein R_1 is hydrogen or alkyl having 1 to 6 carbon atoms, R_2 is hydrogen or alkyl having 1 to 6 carbon atoms, and R_3 is cyanoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carbalkoxy alkyl wherein the alkyl moiety has 1 to 6 carbon atoms, or aralkyl wherein the alkyl moiety has 1 to 6 carbon atoms and the aryl moiety has 6 to 10 carbon atoms, or wherein R_1 is hydrogen or alkyl having 1 to 6 carbon atoms, R_2 is cyanoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carbalkoxyalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, or aralkyl wherein the alkyl moiety has 1 to 6 carbon atoms and the aryl moiety has 6 to 10 carbon atoms, and R_3 is cyanoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carbalkoxyalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, or aralkyl wherein the arlkyl moiety has 1 to 6 carbon atoms and the aryl moiety has 6 to 10 carbon atoms,whereby said 2-substituted pyridine is obtained.

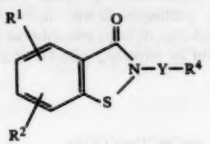
4,212,979

2-SUBSTITUTED BENZISOTHIAZOLONES

Keith H. Baggaley, Redhill, England, assignor to Beecham Group Limited, England

Division of Ser. No. 738,000, Nov. 2, 1976, Pat. No. 4,113,728. This application Nov. 11, 1977, Ser. No. 850,786
Claims priority, application United Kingdom, Nov. 18, 1975, 47373/75
Int. Cl.[2] C07D *513/04*
U.S. Cl. 546—270 **15 Claims**

1. A compound of the formula (II):



(II)

or a pharmaceutically acceptable non-toxic acid addition salt thereof wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen, or R^1 and R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or an oxy-alkylenoxy moiety of 1 to 3 carbon atoms; Y is straight- or branched- chain alkylene of 1 to 12 carbon atoms, and R^4 is pyridyl.

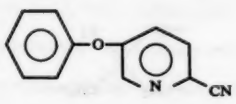
4,212,980

5-PHENOXY-2-PYRIDINECARBONITRILE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 13, 1978, Ser. No. 960,323
Int. Cl.[2] C07D *213/57*
U.S. Cl. 546—288 **2 Claims**

1. A compound of the formula



and pharmaceutically-acceptable salts thereof.

4,212,981
PROCESS FOR PREPARING 3-ISOXAZOLYLUREA DERIVATIVES

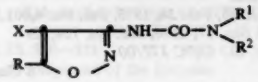
Hisajiro Yukinaga, Kusatsu; Shinzaburo Sumimoto; Ichiro Ishizuka, both of Osaka, and Jitsuo Sugita, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 667,033, Mar. 15, 1976, Pat. No. 4,062,861, which is a continuation of Ser. No. 491,491, Jul. 23, 1974, abandoned. This application Nov. 16, 1977, Ser. No. 852,049

Int. Cl.[2] C07D *261/14*

U.S. Cl. 548—246 **10 Claims**

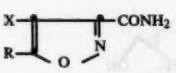
1. A process for preparing a compound of the formula:



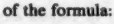
wherein R represents hydrogen, C_1–C_6 alkyl, phenyl, tolyl or xylyl; R^1 represents hydrogen or C_1–C_6 alkyl; R^2 represents C_1–C_6 alkyl, benzyl, phenethyl, phenyl, tolyl or xylyl; or

represents pyrrolidino, piperidino, morpholino or 4-alkylpiperazino; X represents hydrogen or halogen; or R and X form C_3–C_5 alkylene,

which comprises the step of reacting a carboxamide of the formula:



wherein R and X each is as defined above, with an amine of the formula:



wherein R^1 and R^2 each is as defined above, in the presence of an alkaline hypohalite and an alkaline hydroxide in aqueous dimethylsulfoxide.

4,212,982
POLYISOCYANATES WITH AT LEAST ONE HYDANTOIN OR THIOHYDANTOIN RING SUBSTITUTED BY CARBOXYLIC ACID AMIDE GROUPS

Jürgen Lewalter, Odenthal; Rudolf Merten, Leverkusen; Wilfried Zecher, Leverkusen, and Willi Dünwald, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

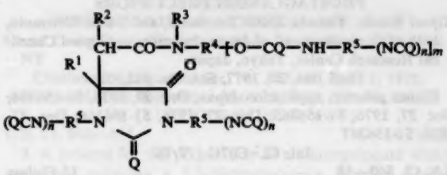
Filed Nov. 8, 1978, Ser. No. 958,690

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 2750772

Int. Cl.[2] C07D *233/78, 233/86*

U.S. Cl. 548—313 **4 Claims**

1. A polyiso(thio)cyanate containing a (thio)hydantoin group of the formula



wherein

R^1 and R^2 are the same or different and each is alkyl having 1–6 carbon atoms, cycloalkyl having 5–8 carbon atoms, alkylaryl having 7–16 carbon atoms, aryl having 6–20 carbon atoms, halogen or hydrogen and when R_1 and R_2 together form a ring, said ring has up to 8 ring members;

R^3 has the same meaning as R^1 and R^2 except that R^3 may not be halogen and may be additionally substituted by hydroxyl when containing two or more carbon atoms;

R^4 is alkyl having 2–10 carbon atoms, cycloalkyl having 5–10 carbon atoms, alkylaryl having 7–16 carbon atoms or aryl having 6–20 carbon atoms;

R^5 is alkyl having 2–20 carbon atoms, cycloalkyl having 5–12 carbon atoms, alkylaryl having 6–20 carbon atoms or aryl having 5–12 carbon atoms all of which are unsubstituted or substituted by halogen;

Q is oxygen or sulfur;

n is an integer from 1–3; and

m is 1 or 2.

4,212,983
MANUFACTURE OF IMIDAZOLINE COMPOUNDS

Brinley M. Phillips, Whitehaven; Robert B. Lace, Egremont, and Alan J. Lambie, Whitehaven, all of England, assignors to Albright & Wilson Limited, Oldbury, England

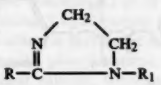
Filed Dec. 20, 1978, Ser. No. 971,449

Claims priority, application United Kingdom, Dec. 22, 1978, 53575/78

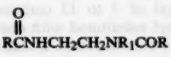
Int. Cl.[2] C07D *233/14, 233/16*

U.S. Cl. 548—352 **11 Claims**

1. A process for the production of an imidazoline of low diamide content which comprises heating a preformed mixture comprising an imidazoline of formula:



and a diamide of the formula



with an amine of the formula

wherein

R represents an alkyl, alkenyl or cycloalkyl group having from 8 to 22 carbon atoms,

R_1 represents an alkyl or alkenyl group having from 1 to 4 carbon atoms or one of said groups containing a hydroxy or an amino substituent,

R_2 represents an aliphatic group having from 1 to 4 carbon atoms or such an aliphatic group containing an amino or hydroxy substituent, and

R_3 represents any of the groups R_2 or a hydrogen atom,

at a temperature of at least 150° C.

4,212,984

PROSTAGLANDIN PRECURSORS

Kiyosi Kondo, Yamato; Daiei Tunemoto, and Teruo Umemoto, both of Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

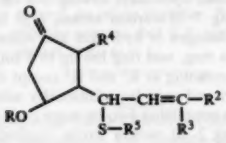
Filed Dec. 20, 1977, Ser. No. 862,329

Claims priority, application Japan, Dec. 27, 1976, 51-156364; Dec. 27, 1976, 51-156365; Dec. 27, 1976, 51-156366; Dec. 27, 1976, 51-156367

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—18 13 Claims

1. A 4-oxycyclopentanone compound represented by the formula (II)



(II)

wherein R represents a hydrogen atom or a protective group for a hydroxy group, R^2 represents a substituted or unsubstituted alkyl group having 1 to 8 carbon atoms, R^3 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R^4 represents a hydroxymethyl group, a methylene group (=CH_2) or a —$COOR^1$ group wherein R^1 represents an alkyl group having 1 to 4 carbon atoms or an aryl group, and R^5 represents an alkyl group having 1 to 4 carbon atoms or an aryl group.

4,212,985

CIS-4,5-DIDEHYDRO-16-PHENOXY-PGE$_1$ COMPOUNDS

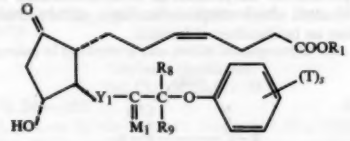
Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 678,948, Apr. 21, 1976. This application Apr. 28, 1978, Ser. No. 900,822

Int. Cl.[2] C07L *177/00*

U.S. Cl. 560—53 7 Claims

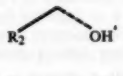
1. An optically active compound of the formula:



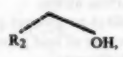
or a racemic form of that compound and the enantiomer thereof;

wherein R_1 is hydrogen or alkyl of one to 12 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive;

wherein M_1 is



or



wherein R_2 is hydrogen, methyl, or ethyl;

wherein Y_1 is trans-CH=CH— or —CH_2CH_2—;

wherein R_8 and R_9 are hydrogen or methyl being the same or different; and

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_3, wherein R_3 is alkyl of one to 4 carbon atoms, inclusive; and wherein s is zero, one, 2, or 3 with the proviso that not more than two T's are other than alkyl;

including alkanoates of 2 to 8 carbon atoms, inclusive, and pharmacologically acceptable salts thereof when R_1 is hydrogen.

4,212,986

2,2-DIFLUORO-PGE$_2$ ANALOGS

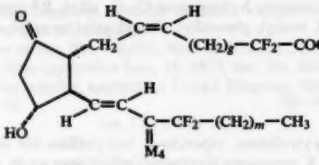
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 552,708, Feb. 24, 1975, Pat. No. 4,001,300. This application Sep. 17, 1976, Ser. No. 724,109

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—121 6 Claims

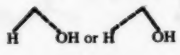
1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

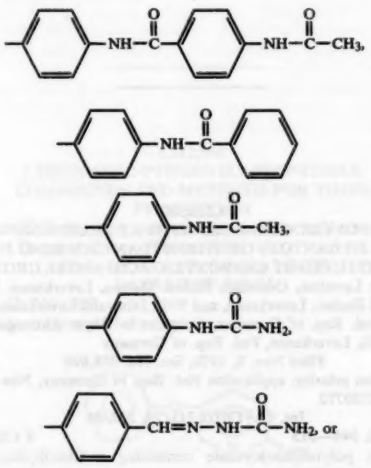
wherein g is 2 to 4, inclusive;

wherein M_4 is

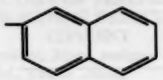


wherein m is 2 to 4, inclusive,

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation,



-continued



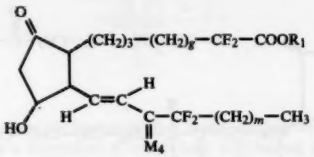
4,212,987

2,2-DIFLUORO-PGE$_1$ ANALOGS

Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 552,708, Feb. 24, 1975, Pat. No. 4,001,300. This application Sep. 17, 1976, Ser. No. 724,159
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—121 6 Claims

1. A compound of the formula



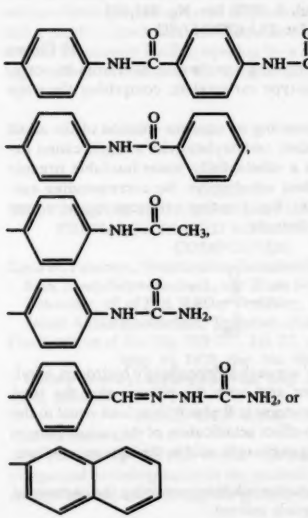
or a mixture comprising that compound and the enantiomer thereof,

wherein g is 2 to 4, inclusive;

wherein M_4 is

wherein m is 2 to 4, inclusive,

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation,



4,212,988

PREPARATION OF 2-KETOGULONIC ACID

Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., NY

Continuation-in-part of Ser. No. 965,626, Dec. 1, 1978, abandoned. This application Mar. 26, 1979, Ser. No. 24,284
Int. Cl.^{2} C07C *59/33, 67/30, 69/61*
U.S. Cl. 560—174 16 Claims

1. A process for the preparation of a 2-ketogulonate which comprises reducing a 2,5-diketogluconate with an amine-borane selected from those of the formula $R_1R_2HN.BH_3$ and pyridine-borane in solution at a pH between about 2 and 7 at a temperature between about −20° to 70° C., wherein R_1 and R_2, are each selected from hydrogen and alkyl of 1 to 4 carbon atoms; and said 2,5-diketogluconate is selected from 2,5-diketogluconic acid, a normal alkyl ester of said acid wherein said alkyl group is of 1 to 4 carbon atoms, and a salt of said acid having a counterion selected from an alkali metal, an alkaline earth metal, ammonium and tetraalkylammonium having from 1 to 4 carbon atoms in each alkyl group.

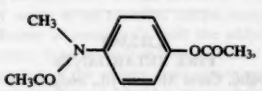
4,212,989

PROCESS FOR PRODUCING CARBOXYLIC ACIDS OR ESTERS THEREOF

Tomiya Isshiki, Tokyo; Yasuhiko Kijima, and Yuh Miyauchi, both of Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 26, 1978, Ser. No. 955,411
Claims priority, application Japan, Nov. 1, 1977, 52-131140
Int. Cl.^{2} C07C *67/36, 67/37*
U.S. Cl. 560—232 2 Claims

1. In a process for producing a carboxylic acid or its ester by reacting an alcohol or an ether with carbon monoxide in the presence of a catalyst composed of at least one metal of Group VIII of the periodic table and a promoter composed of at least one iodine-containing substance selected from the group consisting of iodine and iodine compounds, said alcohol being an aliphatic alcohol containing 1 to 20 carbon atoms, or an aromatic alcohol containing 7 to 20 carbon atoms and said ether being an aliphatic ether containing 2 to 30 carbon atoms or an aromatic ether containing 7 to 30 carbon atoms, the improvement wherein the reaction is performed in the presence of, as a solvent phenyl formate, phenyl acetate, phenyl propionate, phenyl butyrate, phenyl valerate, tolyl acetate, xylyl acetate, mesityl acetate, cumenyl acetate, ethyl phenyl acetate, propyl phenyl acetate, butyl phenyl acetate, chlorophenyl acetate, nitrophenyl acetate, nitrosophenyl acetate, aminophenyl acetate, cyanophenyl acetate,



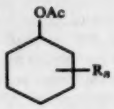
diacetoxybenzene, naphthyl acetate, naphthyl propionate, naphthyl butyrate, diacetoxynaphthalene, diacetoxyanthracene, (diacetoxy)methylanthracene, (diacetoxy)ethylanthracene or (diacetoxy)amylanthracene.

4,212,990
METHOD FOR PRODUCING CYCLOHEXANE DERIVATIVES DIRECTLY FROM AROMATIC HYDROCARBONS

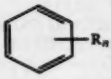
Yutaka Yasuhara; Masaki Nishino, and Seikichi Matsuhira, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 581,788, May 29, 1975, Pat. No. 4,067,915. This application Aug. 5, 1977, Ser. No. 822,140
Int. Cl.² C07C *29/00, 35/08, 67/04, 69/14*
U.S. Cl. 560—241 **17 Claims**

1. A process for producing a cyclohexane derivative having the general formula



wherein Ac is selected from the group consisting of hydrogen, formyl, acetyl and propionyl groups, R is a lower alkyl group having 1 to 3 carbon atoms, and n is an integer of from 0 to 2, which process comprises reacting an aromatic hydrocarbon having the general formula



wherein R and n are the same as above, with hydrogen and a compound having the general formula HOAc wherein Ac is the same as above, in the presence of a strong acid and a hydrogenatin catalyst comprising a combination of at least two noble metals selected from the group consisting of Ru, Rh, Pd, Os, Ir, and Pt.

4,212,991
SINGLE-STAGE PROCESS FOR THE PREPARATION OF TEREPHTHALIC ACID

Jean-Claude Choulet, Meyzieu, and Andre Lally, Venissieux, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 5, 1977, Ser. No. 794,134
Claims priority, application France, May 11, 1976, 76 14867
Int. Cl.² C07C *51/02*
U.S. Cl. 562—480 **9 Claims**

1. A process for the preparation of highly pure terephthalic acid comprising reacting di-potassium terephthalate with benzoic acid in an aqueous reaction medium containing potassium benzoate, wherein the initial composition of reactants introduced into said reaction zone comprises less that about 0.40 mole of di-potassium terephthalate per kg of water, between about 0.2 and 0.8 moles of potassium benzoate per kg of water and between about 4 to 12 moles of benzoic acid per mole of di-potassium terephthalate and wherein the reaction zone is maintained at temperatures greater than about 80° C.

4,212,992
FIRE RETARDANTS

David J. Fenoglio, Carol Stream, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 434,347, Jan. 17, 1974, Pat. No. 4,041,016. This application Dec. 16, 1976, Ser. No. 751,133
Int. Cl.² C07C *63/44, 49/44*
U.S. Cl. 562—492 **6 Claims**

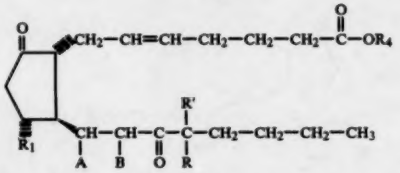
1. A halogen containing compound selected from the group consisting of 1,2,3,4-tetrahalonaphthobornadienes, 1,2,3,4,7,7-hexahalonaphthobornadienes, 1,2,3,4-tetrahalo-7,7-dialkoxynaphthobornadienes, 1,2,3,4-tetrahalo-7-one-naphthobornadiene and 2,3,4-trihalo-9,10; 4a,9a-tetrahydroanthracene-1-carboxylic acid.

4,212,993
16-SUBSTITUTED PROSTAGLANDINS

George W. Holland, and Perry Rosen, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 813,068, Jul. 5, 1977, Pat. No. 4,163,016. This application Apr. 6, 1979, Ser. No. 27,589
Int. Cl.² C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula:



wherein A and B are individually hydrogen; R_4 is hydrogen or lower alkyl; R_1 is lower alkyl; R' is fluoro, lower alkyl or trifluoromethyl; R is hydrogen, fluoro, or lower alkyl; or their optical antipodes or racemates thereof.

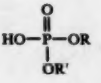
4,212,994
PROCESS FOR THE PREPARATION OF CARBOXYLIC ACID

David A. Wilson, Richwood, and Roy W. Schmidt, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 3, 1978, Ser. No. 921,685
Int. Cl.² C07C *51/02*
U.S. Cl. 562—568 **10 Claims**

1. A process for preparing a carboxylic acid from its corresponding alkali metal-type carboxylate, comprising the steps of:

(a) reacting by contacting an aqueous solution of the alkali metal or ammonium carboxylate with a liquid cation exchange agent in a substantially water-insoluble organic solvent which does not dissolve the corresponding carboxylic acid, said liquid cation exchange agent corresponding to the formula



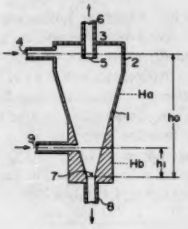
wherein R and R' are each independently hydrogen, alkyl, aralkyl, alkaryl or aryl with the proviso that the total number of carbon atoms in R plus R' is at least equal to the integer 1, so as to effect acidification of the carboxylate to the corresponding carboxylic acid in the aqueous medium; and

(b) separating the aqueous solution containing the carboxylic acid from the organic solvent.

4,212,995
PROCESS FOR TREATMENT BY LIQUID CYCLONE FOR PRODUCTION OF TEREPHTHALIC ACID SUSPENSION HAVING REDUCED IMPURITY CONTENT

Shigemi Shiraki, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Aug. 8, 1978, Ser. No. 931,891
Claims priority, application Japan, Aug. 12, 1977, 52-96176
Int. Cl.[2] C07C 51/42
U.S. Cl. 562—485 5 Claims



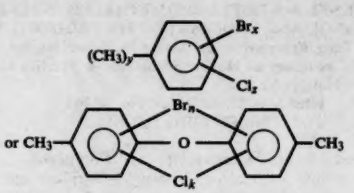
1. A process for treatment by a liquid cyclone for the production of a suspension of terephthalic acid having a reduced impurity content which comprises supplying a fresh and hot lower aliphatic carboxylic acid solvent to a liquid-phase catalytic oxidation product of a p-alkylbenzene or a hot, impurity-containing suspension of terephthalic acid particles in a mother liquor containing a lower aliphatic carboxylic acid solvent, feeding the resulting mixture into a liquid cyclone, treating it in the cyclone at an elevated temperature, withdrawing an impurity-containing liquid composed mainly of said mother liquor from a withdrawal opening provided near one end of the cyclone, and withdrawing a suspension of terephthalic acid particles in a lower aliphatic carboxylic acid solvent consisting mainly of said fresh solvent from a withdrawal opening provided near the other end of the cyclone; wherein a fresh lower aliphatic carboxylic acid solvent is additionally supplied into the cyclone through an opening provided between a position apart from the suspension withdrawal opening of the liquid cyclone toward its mixture-feeding opening by a distance corresponding to about two-thirds of the distance (h_o) from the mixture-feeding opening to the suspension withdrawal opening and a position apart from the suspension withdrawal opening toward its mixture feeding opening by a distance corresponding to about one-tenth of the distance (h_o).

4,212,996
PROCESS FOR THE SIDE-CHAIN CHLORINATION OF PERHALOGENATED METHYL AROMATIC COMPOUNDS

Egon N. Petersen, Neunkirchen-Seelscheid; Hermann Richtzenhain, Much-Schwellenbach, and Klaus Schrage, Königswinter-Uthweiler, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 709,057, Jul. 27, 1976. This application May 15, 1978, Ser. No. 905,662
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1975, 2534210
Int. Cl.[2] C07C 41/00, 17/14
U.S. Cl. 568—639 21 Claims

1. Process for the side chains chlorination of an aromatic compound perhalogenated in the nucleus or nuclei, containing methyl groups, and having the general formula:



to chlorinate the methyl group(s) to $—CH_2Cl$, wherein y=1 or 2, z=0 to 1, x=6−(y+z), n=0 to 8 and k=(8−n), and the methyl groups are, respectively, in the ortho, meta or para position to one another and in the p-position to the oxygen bridge, said compound containing traces of a metal of the group Fe, Fe ion, Al, or Al ion as impurity, consisting essentially of thermally chlorinating said aromatic compound in the liquid phase, in the presence of a complexing agent for said metal, the complexing agent being of the group cyclohexylene-(1,2)-dinitrilotetraacetic acid, bis-(aminoethyl)-glycolether-N,N,N',N'-tetraacetic acid, (3-aza-3-(carboxymethyl))-pentamethylenedinitrilotetraacetic acid; and ethylenediamine-tetraacetic acid.

4,212,997
PROCESS FOR RECOVERING 2,2-BIS(4-HYDROXYPHENYL)PROPANE FROM AN ADDUCT OF 2,2-BIS(4-HYDROXYPHENYL)PROPANE AND PHENOL

John N. Adams, Pittsburgh, Pa.; Gaylord M. Kissinger, Mt. Vernon, Ind., and Michael C. Lee, Pensacola, Fla., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 27, 1978, Ser. No. 919,667
Int. Cl.[2] C07C 37/44
U.S. Cl. 568—724 11 Claims

1. A process for recovering 2,2-bis(4-hydroxyphenyl)propane in the form of rhombic crystals from a non-crystalline mixture at an elevated temperature above room temperature, the reaction mixture comprising 2,2-bis(4-hydroxyphenyl)propane, organic by-products resulting from the condensation reaction of phenol and acetone, and phenol, wherein said phenol is present in at least an equimolar amount with respect to said 2,2-bis(4-hydroxyphenyl)propane, the process comprising:

(a) lowering the temperature of said mixture from an elevated temperature at which the 2,2-bis(4-hydroxyphenyl)-propane is soluble to a temperature sufficient to cause the separation from said mixture of said 2,2-bis(4-hydroxyphenyl) propane and phenol in equimolar proportions as a crystalline adduct and recovering the adduct;

(b) forming an admixture of said adduct of step (a) with an excess of water at an elevated temperature which is at least sufficient to completely melt the adduct, the water being present in an amount at least sufficient to retain the phenol portion of the adduct upon subsequent crystallization therefrom of the 2,2-bis(4-hydroxyphenyl)propane;

(c) lowering the temperature of said mixture of water and melted adduct to a temperature sufficient to cause the selective separation therefrom of the 2,2-bis(4-hydroxyphenol)propane portion of the adduct in the form of rhombic crystals substantially free of said phenol portion; and

(d) recovering said rhombic crystals of 2,2-bis(4-hydroxyphenyl)propane.

4,212,998

1-PHENYL-3-(3-TRIFLUOROMETHYLPHENYL)-2-PROPANOL AND PROCESS FOR ITS PRODUCTION

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 14, 1979, Ser. No. 38,762
Int. Cl.[2] C07C *31/14*
U.S. Cl. 568—807 4 Claims

1. 1-Phenyl-3-(3-trifluoromethylphenyl)-2-propanol.

2. A method of making 1-phenyl-3-(3-trifluoromethylphenyl)-2-propanol comprising the steps of:

a. condensing 3-trifluoromethylbenzaldehyde with acetophenone under basic conditions to produce a substituted chalcone,

b. epoxidizing said substituted chalcone to produce the corresponding epoxide,

c. converting the epoxide to a chlorohydrin, and

d. hydrogenating said chlorohydrin to produce a diol and subsequently converting said diol into the corresponding alcohol, 1-phenyl-3-(3-trifluoromethylphenyl)-2-propanol.

4,212,999

1-PHENYL-3-(3-TRIFLUOROMETHYLPHENYL)-1,2-PROPANE DIOL AND PROCESS FOR ITS PRODUCTION

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 14, 1979, Ser. No. 38,763
Int. Cl.[2] C07C *31/14*
U.S. Cl. 568—807 4 Claims

1. 1-Phenyl-3-(3-trifluoromethylphenyl)-1,2-propan-diol.

2. The process for producing 1-phenyl-3-(3-trifluoromethylphenyl)-1,2-propan-diol which comprises the steps of:

(a). condensing 3-trifluoromethylbenzaldehyde with acetophenone under basic conditions to produce a substituted chalcone,

(b). epoxidizing said substituted chalcone to produce the corresponding epoxide,

(c). converting the epoxide to a chlorohydrin, and

(d). hydrogenating said chlorohydrin to produce a diol, 1-phenyl-3-(3-trifluoromethylphenyl)-1,2-propan-diol.

4,213,000

REDUCING COLOR FORMERS IN 1,4-BUTANEDIOL

John S. Coates, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1979, Ser. No. 42,945
Int. Cl.[2] C07C *31/20, 29/24*
U.S. Cl. 568—861 7 Claims

1. In the process for preparing 1,4-butane-diol by the catalytic hydrogenation of 1,4-butynediol the improvement comprising subjecting the hydrogenation reaction product to acid hydrogenation at a pH of 1–6 and a temperature of 115°–200° C.

4. In the process for preparing 1,4-butanediol by the catalytic hydrogenation of 1,4-butynediol at a temperature of 60°–150° C. and hydrogen pressure of 2500–5500 psig in the presence of a hydrogenation catalyst at a pH of 7–12 to form a hydrogenation reaction product containing 1,4-butanediol, the improvement comprising conducting an acid hydrogenation of the hydrogenation reaction product at a temperature of 115°–200° C., hydrogen pressure of 2500–5500 psig and a pH of 1–6 in the presence of a hydrogenation catalyst to form a reaction product containing 1,4-butanediol.

4,213,001

OLIGOMERIZING ALPHA-OLEFINS WITH A HETEROGENEOUS CATALYST

Ajay M. Madgavkar, Pittsburgh; Harold E. Swift, Gibsonia, and Barrett L. Cupples, Franklin Township, Westmoreland County, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 27, 1978, Ser. No. 955,210
Int. Cl.[2] C07C *3/18*
U.S. Cl. 585—510 11 Claims

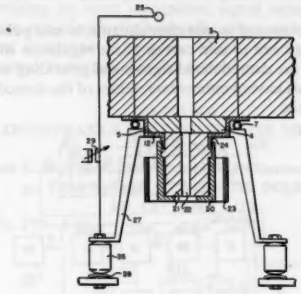
1. The process for oligomerizing an alpha-olefin having from six to twelve carbon atoms and mixtures thereof which comprises contacting a mixture consisting essentially of said alpha-olefin and a suspension of a powdered solid adsorbent having a surface area of at least about 0.1 m^2/g. at a temperature between about −50° and about 150° C. with boron trifluoride at a pressure between about 5 and about 1,000 psig. (about 135 and about 7,000 kPa).

4,213,002

ELECTRICALLY HEATED MELTING FURNACE FOR MINERAL MATERIALS

Helmut Pieper, Lohr, Fed. Rep. of Germany, assignor to Sorg GmbH & Co. KG, Lohr, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 964,555
Int. Cl.[2] C03B *5/02, 5/26*
U.S. Cl. 13—6 **6 Claims**



1. In an electrically heated melting furnace for the melting of mineral materials, such as frits, enamels and the like or glass, wherein a bath of molten material contained in a tank is heated by means of electrodes contacting the molten material and having a current flowing therethrough which heats the molten material by Joule's heat, wherein a batch is fed onto the melt or molten bath, and the molten product is withdrawn from the bottom of the tank, the improvement wherein the furnace tank receiving the molten bath has the cross-section of a regular polygon; a plurality of heating elements are arranged above the batch material, and heating electrodes are positioned in the lower portion of the molten bath above the tank bottom; and an outlet port for the molten material is disposed in the tank bottom and comprises a bottom outlet including a cylindrical element, a further underlying, concentrically disposed, circular disc-shaped element of a refractory material being conductive at high temperature and acting as an electrical conductor, which elements are conductively coupled to a current supply line, a metallic annular element retaining the circular disc-shaped element and having a bottom plate portion for supporting same, a shell of a heat resistant metal disposed below said bottom plate portion, a cylindrical part of refractory material inserted in the shell and having a central aperture and an induction coil through which high-frequency alternating current flows surrounding the shell with a space therebetween.

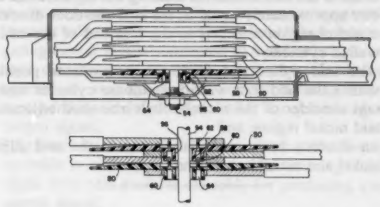
4,213,003

BUS CONDUIT ELECTRICAL DISTRIBUTION SYSTEM

Elmer T. Carlson, 3189 Morningside Blvd., Port St. Lucie, Fla. 33452

Continuation-in-part of Ser. No. 755,446, Dec. 29, 1976, Pat. No. 4,112,249, which is a continuation-in-part of Ser. No. 554,684, Mar. 3, 1975, Pat. No. 4,008,365. This application Feb. 15, 1978, Ser. No. 877,595
Int. Cl.[2] H02G *5/08*
U.S. Cl. 174—88 B **2 Claims**

2. A joint setup in a bus bar system which comprises one set of bus bars having bared ends side by side, another set of bus bars having bared ends side by side adapted to interfit with the first set with corresponding bus bars having flat faces against flat faces of the first set, and a plurality of at least mainly flat insulating members independent of the bus bars adapted to fit between and on the outside of the respective bus bars to insulate them from one another insofar as not joined together and from the outside, the bus bars and the insulating members all having corresponding spaces in the area of the jointure through which a single bolt can pass to join all together, and the respective insulating members nearest to one another having concentric protrusions around these spaces, one protrusion being in the form of a double wall with a recess in between and



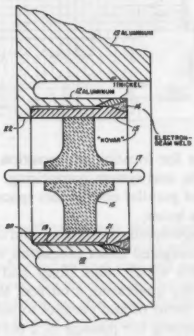
the corresponding protrusion of the other insulating member being in the form of a single wall adapted to interfit into this recess, the whole being enclosed in a suitable joint box.

4,213,004

HERMETIC ELECTRICAL FEEDTHROUGH FOR ALUMINUM HOUSING AND METHOD OF MAKING SAME

Roy M. Acker, Los Angeles, and Kenneth Lui, Fountain Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1978, Ser. No. 921,138
Int. Cl.[2] H01B *17/26*
U.S. Cl. 174—151 **2 Claims**



1. The improvement in mounting a ceramic electrical feedthrough insulator having a low coefficient of expansion nickel-cobalt-iron alloy cylinder with an exterior shoulder, in an aluminum housing comprising the steps of:

a. through-boring a hole in the aluminum housing;

b. machining a channel recess in the aluminum housing concentric with the said through-bore providing an aluminum cylinder having a free end;

c. plating a region of nickel on the said free end of the aluminum cylinder;

d. machining a counter bore in the inner surface of the said aluminum cylinder providing a thin wall cylinder of aluminum having a nickel end region;

e. positioning the said feedthrough insulator in the said counter bore with the said exterior shoulder adjacent the said nickel end region; and

f. electron beam welding the said exterior shoulder of the said feedthrough to the said nickel region.

2. Structure for providing a hermetic electrical feedthrough for an aluminum housing comprising:

a. a cylindrical electrical feedthrough insulator having an exterior nickel-cobalt-iron alloy shell enclosing an insula-

tor and central conductor, with a shoulder of determined diameter positioned at one end of the said shell;

b. a thin walled aluminum cylinder having a free end fabricated in the said aluminum housing having an inside diameter approximately equal to the said shoulder diameter;

c. a nickel region attached to the free end of the said thin walled cylinder;

d. the said cylindrical feedthrough insulator positioned within the said thin walled aluminum cylinder with the said shoulder of the nickel-cobalt-iron shell adjacent the said nickel region; and

e. an electron beam weld fabricated in the said adjacent nickel and nickel-cobalt-iron.

4,213,005

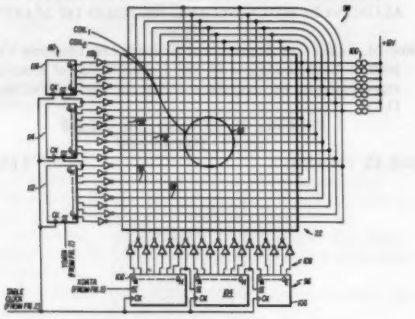
DIGITIZER TABLET

Eugene A. Cameron, Apt. L5, 11700 Old Columbia Pike, Silver Spring, Md. 20904

Filed Dec. 13, 1978, Ser. No. 968,841

Int. Cl.[2] G08C *21/00*

U.S. Cl. 178—18 **32 Claims**



1. A system for locating the position of a cursor along a coordinate axis, said system comprising:

a plurality of parallel conductors spaced along the axis and defining a locus;

means for sequentially energizing said conductors in simultaneously energized lesser pluralities with a fixed energization pattern which steps along said plurality of conductors, thereby generating a current sheet which translates along the locus of and parallel to said conductors;

means for sensing the passage of a particular portion of the current sheet across a reference point carried by the cursor; and

means responsive to the time of passage of the particular portion of the current sheet for generating an output signal representing the position of the cursor along the coordinate axis.

4,213,006

CIRCUIT ARRANGEMENT FOR THE COARSE SYNCHRONIZATION OF CARRIER SIGNALS AND PULSE SIGNALS WITH DATA SIGNALS IN A DATA RECEIVER

André Gerges, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 861,000

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657914

Int. Cl.[2] H04L *27/06, 25/36*

U.S. Cl. 375—97 **5 Claims**

1. A circuit arrangement for the coarse synchronization of carrier signals and pulse signals with data signals in a data receiver which receives modulated data signals comprising:

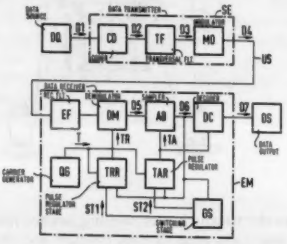
a source of carrier signals;

a carrier phase regulation stage connected to said source of carrier signals;

a demodulator, including an input for receiving data modulated carrier signals and an input connected to the output of said carrier phase regulation stage, for demodulating the received signals;

a pulse regulation stage for altering the phase of pulse signals;

a sampler connected to said demodulator, to said pulse regulation stage and to said carrier phase regulation stage for sampling the demodulated signals and providing sampled data signals having momentary values of the demodulated data signals;



a decoder connected to said sampler to decode the sampled data signals and provide decoded output data; and

a switching stage connected to said sampler and to said carrier and pulse regulation stages, said switching stage providing first control signals to said carrier phase regulation stage for altering the carrier phase and second control signals to said pulse regulation stage for altering the pulse phase in response to and as long as the difference between the momentary values of the sampled data signals and the predetermined theoretical values, averaged over a predetermined duration exceeds a predetermined threshold value.

4,213,007

METHOD AND APPARATUS FOR MONITORING A PULSE-CODE MODULATED DATA TRANSMISSION

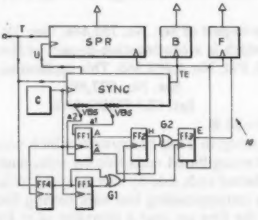
Gerhard Funk, Ennetbaden, Switzerland, assignor to Patelhold Patentverwertungs- & Electro-Holding AG, Glarus, Switzerland

Filed Sep. 8, 1978, Ser. No. 940,568

Claims priority, application Switzerland, Sep. 13, 1977, 11146/77

Int. Cl.[2] H04B *3/36*

U.S. Cl. 375—10 **6 Claims**



1. A method for monitoring the received pulses of a transmitted pulse code modulation signal to determine if said received pulses lie within a predetermined pulse distortion tolerance zone, said method comprising the steps of:

monitoring the arrival of edges of said received pulses to

determine the number of edges of said received pulses which arrive during first and second consecutive predetermined time zones, the total period of said first and second time zones being equal to the period of the pulse pattern of said received message which would occur in the case of distortionless transmission, said first time zone extending around the position where the pulse edge of said received pulses would be in the case of distortionless transmission; and

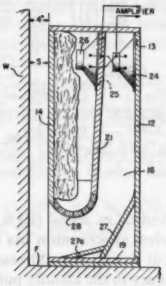
generating an error recognition signal when either more than one of said received pulse edges arrives during said first time zone or only one of said received pulse edges arrives during said second time zone.

4,213,008

LOUDSPEAKER ENCLOSURE FOR MID-WALL LOCATION

Edmund R. Helffrich, 3802 Turner St., Allentown, Pa. 18104

Filed Nov. 22, 1978, Ser. No. 963,068
Int. Cl.² H04R 1/30
U.S. Cl. 179—1 E **10 Claims**



7. A loudspeaker enclosure system including a cabinet having a front panel for facing into the listening area a room and having a horn within the cabinet, the horn having a front horn wall common with said front panel and having a rear horn wall spaced from the front wall, said horn walls defining a throat portion of the horn, and the system having loudspeaker driver means at said throat portion and comprising a first loudspeaker mounted in the front horn wall and having a cone facing into the room, a second loudspeaker mounted in the rear horn wall and having a cone facing toward the first loudspeaker, and the loudspeakers being interconnected for receiving electrical drive in such phase relationship that the cones of the loudspeakers move oppositely, whereby either to simultaneously compress or rarefy the air in the horn throat portion while the first loudspeaker radiates directly into the room.

4,213,009

SYSTEM OF CONNECTING A WIRE TELECOMMUNICATION AND A RADIO COMMUNICATION

Koro Suzuki, Tokyo, Japan, assignor to Whyte & Hirschboeck S. C., Milwaukee, Wis.

Continuation of Ser. No. 852,822, Nov. 18, 1977, and a continuation of Ser. No. 678,045, Apr. 19, 1976. This application Nov. 3, 1978, Ser. No. 957,435
Int. Cl.² H04Q 7/04
U.S. Cl. 179—2 EA **5 Claims**

1. A cordless telephone assembly including a portable assembly and coupling assembly for coupling the portable assembly to a telephone line, said portable and coupling assemblies each having a radio transmitter and a radio receiver for communicating with each other, said portable assembly being constructed and arranged to transmit a carrier wave and first and second modulating frequency signals applied to said carrier wave,

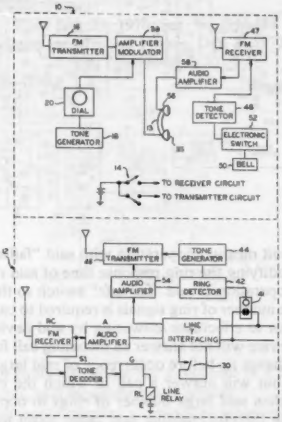
means for intermittently interrupting said second modulating frequency signal in accordance with a signal interrupting sequence, said coupling assembly comprising:

first circuit means including line seizure means operative to connect said coupling assembly to said telephone line and gating circuit means connected to said line seizure means,

second circuit means comprising first tone selective means operable in response to said first modulating frequency signal from said portable assembly for producing a first output signal,

third circuit means comprising second tone selective means operable in response to said second modulating frequency signal from said portable assembly for producing a second output signal,

said gating circuit means being connected to said second and third circuit means for receiving said first and second output signals and being operable in response thereto to actuate said line seizure means for connecting said coupling assembly to said telephone line whereby said coupling assembly operates to couple said portable assembly to said telephone line when said first and second modulating frequency signals are received by the radio receiver of said coupling assembly so that said coupling means will not be connected to said telephone line when an extraneous signal is received having either of said first or second frequency signals,



said third circuit means being responsive to the interruptions of said second frequency signal by interrupting and reestablishing its output signal for disabling and enabling said first means in correspondence to said signal interrupting sequence and fourth circuit means coupled to said gating means for maintaining said gating means in an enabled condition when said first output signal disappears, reset means for resetting said fourth circuit means to disable said fourth circuit means when said second signal disappears, and delay means for delaying the operation of said reset means when said second signal is interrupted during a signal interrupting sequence.

4,213,010

FAIL-SAFE MECHANISMS FOR A TELEPHONE ANSWERING DEVICE

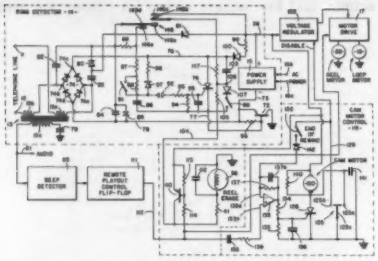
Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Filed Jul. 17, 1978, Ser. No. 925,370
Int. Cl.² H04M 1/65
U.S. Cl. 179—6 E **5 Claims**

1. In a telephone answering device having a ring detector,

recording means for recording incoming messages on a tape, and message indicator means advanced as said tape is wound onto a takeup reel, the length of said tape being sufficient to record a certain number of such messages, which device having remote controlled playback capability actuated by receipt of a coded signal transmitted via the telephone line and terminated by receipt of a second such coded signal, said device having turn-off means, activated each time said recording means has run for a duration of time corresponding to the time for recording a single incoming message, for turning off said device and thereby terminating the answering cycle, actuation of remote controlled playback disabling said turn-off means so that said device will not be turned off each time said recording means has run for said corresponding time duration while remotely playing out previously recorded incoming messages, the improvement comprising:

a "fail-safe" switch operated when said indicator means indicates that said sufficient length of tape has been wound onto said takeup reel,



first circuit means, cooperating with said "fail-safe" switch, for modifying the ring response time of said ring detector upon operation of said "fail-safe" switch so that receipt of a large number of ring signals is required to cause said ring detector to effectuate answering by said device, whereby said device will not answer an incoming call for which the caller hangs up before occurrence of said large number of rings, but will answer a call in which the caller allows more than said large number of rings to occur, such answering thereby enabling said caller again to actuate remote controlled playback with concomitant rewinding of the incoming messsage tape and resetting of the device normally to answer subsequent incoming calls, and

second circuit means, responsive to operation of said "fail-safe" switch, for enabling said turn-off means to turn off said device when next activated by said recording means, thereby ensuring turn-off of said device even in the event that remote controlled playout is not terminated because the second coded signal is not received.

4,213,011

PROCESS FOR T.D.M. FRAME SYNCHRONIZATION EMPLOYING VARIABLE SYNCHRONIZING WORDS

Ludwig Hoelzl, Sauerlach, and Konrad Reisinger, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

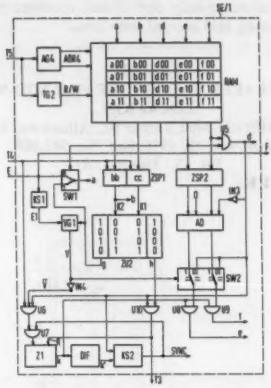
Filed Aug. 10, 1978, Ser. No. 932,482

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2740997

Int. Cl.² H04J 3/06

U.S. Cl. 370—100 **4 Claims**

1. A process for t.d.m. frame synchronization at a receiver employing variable synchronizing words, and in which at the transmitter there is produced a t.d.m. signal which consists of groups each comprising p bits and one marker bit and, each multiplex frame contains a total of m marker bits of which in each case s marker bits form the synchronizing words and, at the transmitter s—1 marker bits determine the following s-th marker bit, and the t.d.m. signal is transmitted to the receiver and stored in a storage means wherein p+1 addresses are produced which are periodically assigned to the p bits and marker bits of each group, and at the receiver for each address the s-th bit is obtained from s—1 bits, which is stored in the storage means with the t.d.m. signal and compared with the corresponding received bit of the t.d.m. signal, and in the event an identity occurs an identity pulse is produced and consecutive identity pulses having a like address are counted and depending upon the counting result, a frame synchronizing signal is produced with the aid of which the receiver t.d.m. frame is set up, characterized in that in the non-synchronous



state the received t.d.m. signal (E) is fed to the storage means (RAM), and when synchronism has been achieved the pulses (V) which occur during the addresses of the marker bits and are complementary to the identity pulses (V) are produced and in place of the t.d.m. signal (E) the s-th bits obtained at the receiving end are fed to the storage means (RAM) as long as the number of complementary pulses (V) per multiplex frame is smaller than a given number, and that the furnishing of the t.d.m. signal (E) to the storage means is reintroduced when, in the synchronous state, the number of complementary pulses (V) per multiplex frame (r) is greater than said given number.

4,213,012

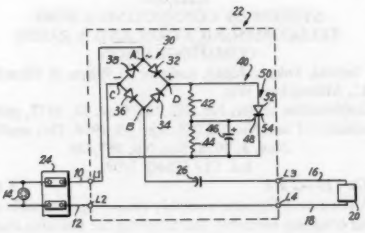
DISCRIMINATING MEANS FOR TELEPHONE CIRCUITS

Michael H. Carroll; Richard J. Taylor, and Peter J. McCubbin, all of Owen Sound, Canada, assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 3, 1978, Ser. No. 957,379

Int. Cl.² H04M 1/74

U.S. Cl. 179—84 R **1 Claim**



1. In a telephone system including a dial means connected across telephone lines and a buzzer device, the improvement

which comprises symmetrical means for discriminating against a succession of short time period dialing pulses or the like so that such pulses will not actuate said buzzer device, while permitting ringing signals to be transmitted to said device, said discriminating means comprising

a voltage divider, including a pair of resistors connected directly in series, a capacitor in shunt with one of said resistors;

a latching device, having a gate electrode and output electrodes, the output electrodes thereof being connected to the ends of said pair of resistors;

said capacitor being connected to the gate electrode of said latching device such that a transmission path for ringing signals is established, regardless of polarity of said signals, when said latching device has been rendered conductive in response to a threshold voltage built up on said capacitor;

said other resistor and said capacitor forming a timing network such that a predetermined time period must be exceeded for said threshold voltage to be attained such that said latching device will e actuated;

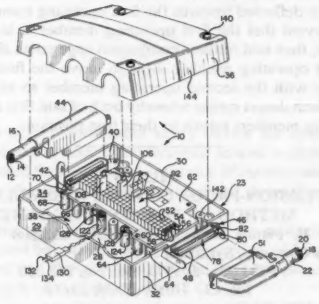
a full wave rectifying bridge network including a plurality of diodes, said resistors directly connected in series being connected to opposite apexes of said bridge network, the other apexes of said bridge network being connected in series with said buzzer device across said telephone lines.

4,213,013

TELEPHONE NETWORK/SUBSCRIBER INTERFACE DEVICE

Jiulio E. Perna, Naperville, and Gerhard R. Mache, Hoffman Estates, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 17, 1978, Ser. No. 879,021
Int. Cl.[2] H04Q *1/02*
U.S. Cl. 179—98 **16 Claims**



1. A modular interface device comprising:

a housing;

first connector means mounted to said housing and engageable with a plurality of telephone network trunk lines, each said trunk line including a plurality of conductors;

second connector means mounted to said housing and engageable with a plurality of subscriber telephone lines, each said subscriber line including a plurality of conductors;

an array of contact members disposed within said housing and aligned in a plurality of rows, the contact members of each said row being electrically connected to one of said connector means so as to electrically connect each row of contact members with the conductors engaged with said one said connector means;

means for interengaging one contact member from each said row of contact members to electrically interconnect the conductors of one said trunk line with the conductors of one said subscriber line, said interengaging means further including means for avoiding interconnection between a trunk line conductor and a subscriber line conductor when said interengaging means are improperly oriented; and

means including terminal elements on said housing having contact surfaces engageable with appropriate closed circuit test set means, and a test probe electrically connected to said terminal elements and engageable with the contact members of each of said network trunk lines and each of said subscriber telephone lines to permit ready testing of the electrical circuit of each said network trunk line and each said subscriber telephone line being tested.

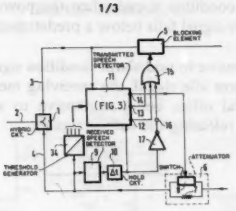
4,213,014

HALF ECHO-SUPPRESSOR FOR A FOUR-WIRE TELEPHONE LINE

Jacques Luder, Ris Orangis, France, assignor to Societe Anonyme, Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 21, 1978, Ser. No. 944,282
Claims priority, application France, Oct. 3, 1977, 77 29637
Int. Cl.[2] H04B *3/20*
U.S. Cl. 179—170.2 **4 Claims**

1/3



1. A half echo-suppressor for a terminal of a fourwire telephone circuit, said suppressor comprising:

a send channel including a controlled transmission blocking element;

a receive channel including a controlled transmission attenuator; and

first and second speech detectors, respectively connected to said send and receive channels, for directing said transmission blocking element to block said send channel when said second speech detector detects speech on said receive channel and for directing said attenuator to attenuate said receive channel when said first speech detector detects speech on said send channel, wherein said first speech detector comprises:

means, connected to said send channel, for periodically assigning an index to said send signal, the resulting indices being representative of the amplitude characteristics of the speech signal present on said send channel, said assigning means assigning a negative index to noise;

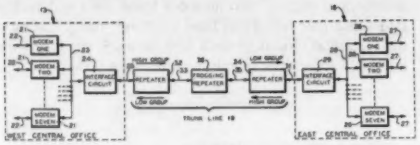
a digital accumulator, connected to said assigning means, for accumulating said indices, said send channel being considered active when the contents of said accumulator reaches an upper limit, and inactive when the contents of said accumulator reaches a lower limit; and

at least one digital comparator connected to said accumulator, for generating a send channel unblocking command for said blocking element when the contents of said accumulator, when increasing, exceeds a first threshold intermediate said upper and lower limits, said unblocking command being discontinued when the content of said accumulator, while decreasing, falls below a second threshold lower than the first.

4,213,015
FAILURE ALARM FOR A TRANSMISSION LINE COMMUNICATIONS SYSTEM

Mahlon D. Kimbrough, Hurst, Tex., assignor to Reliance Telecommunication Electronics Company, Bedford, Tex.

Filed Dec. 4, 1978, Ser. No. 966,000
Int. Cl.[2] H04J 1/12; H04B 1/16
U.S. Cl. 179—175.2 C 21 Claims



11. In a telephone system having a trunk line connected between two end central offices, each end central office having means for transmitting and receiving continuous information carrier signals over the trunk line, an alarm means comprising:

means responsive to the carrier signals received at one of the end central offices for generating a signal representing the power level of at least one of the received carrier signals;

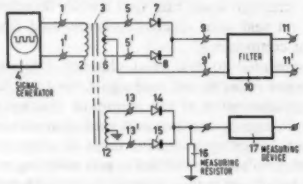
means responsive to said power level signal for generating an alarm condition signal when the power level of said one carrier signal falls below a predetermined magnitude; and

means responsive to said alarm condition signal for generating an alarm idle signal, the receiving means at said one end central office being responsive to said alarm idle signal for releasing the carrier signals.

4,213,016
ARRANGEMENT FOR MEASURING THE LINE CONDITION OF A SUBSCRIBER'S LINE CIRCUIT BY MEANS OF A MEASURING RESISTOR

Klaus-Dieter K. Brockmann, Hilversum, and Eise C. Dijkmans, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,455
Claims priority, application Netherlands, Mar. 6, 1978, 7802422
Int. Cl.[2] H04B 3/46; H04M 19/00
U.S. Cl. 179—175.3 R 9 Claims

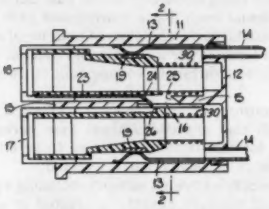


7. A system for monitoring a telephone subscriber's line circuit comprising, a signal generator for generating a signal having a periodic waveform, an AC/DC converter, circuit means coupling the signal generator to the subscriber's line circuit via the AC/DC converter, a measuring resistor, means for inductively coupling the measuring resistor to the subscriber's line circuit via a part of said circuit means in which the periodic waveform signal flows, and a measuring device coupled to the measuring resistor for measuring the signal developed thereacross.

4,213,017
MULTIPLE SWITCH ASSEMBLY WITH DETENT AND INTERLOCK

Keith Lewis, Lancashire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 10, 1978, Ser. No. 876,927
Claims priority, application United Kingdom, Mar. 26, 1977, 12793/77
Int. Cl.[2] H01H 9/24
U.S. Cl. 200—5 B 3 Claims

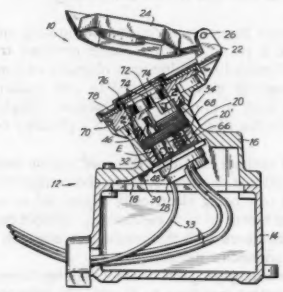


1. An electrical switch assembly including first and second push-push switches including respective first and second detent means as hereinbefore defined, said first and second switches being positioned side by side, the operating member of the first switch carrying first abutment means which during movement of the first operating member from its first position to its second position with the second operating member in its first position, engages corresponding second abutment means on the second operating member to move the second operating member from its first position to its second position, and said second operating member carrying a resilient component which, during movement of the second operating member beyond its second position to release the second switch detent means, is deflected towards the first operating member so that in the event that the first operating member is in its second position, then said resilient component engages an abutment on the first operating member so as to move the first operating member with the second operating member so releasing the first switch detent means whereby both of said first and second operating members return to their first position.

4,213,018
EXPLOSION-PROOF CONTACT ASSEMBLY AND METHOD OF FORMING THE SAME

Thomas P. Piston, Baldwinsville, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Jun. 6, 1978, Ser. No. 913,220
Int. Cl.[2] H01R 33/30, 33/54
U.S. Cl. 200—51.12 7 Claims



1. An explosion proof contact assembly comprising a base

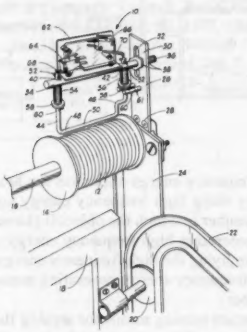
member; a plurality of electrical contacts arranged in pairs with the two contacts of each pair being disposed on opposite sides of said base member; means for providing electrical continuity between the two contacts of each pair, said electrical contacts and base member together forming a substantially rigid contact unit; and a contact body suitable for mounting in a contact assembly which receives said contact unit to form two compartments for said contacts, said contact body covering and sealingly contacting the peripheral surfaces of said base member while exposing said electrical contacts in each compartment and forming a flame path which is defined as the path having the shortest distance between said compartments as measured along the areas of contact between said contact unit and said contact body.

4,213,019

OVERHEAD DOOR CABLE SAFETY DEVICE

Robert L. Houp, St. Joseph, Mo., assignor to J. R. Weaver, Inc., St. Joseph, Mo.

Filed Jun. 26, 1978, Ser. No. 919,409
Int. Cl.[2] B65H *25/14*; B66D *1/48*
U.S. Cl. 200—61.13 **1 Claim**



1. An overhead door cable safety device for suspending above an overhead door cable wrapped around a cable drum, the device used for signaling the operator of the overhead door or stopping the operation of the overhead door, the device comprising:

a mounting bracket adjacent one end of the cable drum;

an elongated bolt having one end attached to said mounting bracket, said elongated bolt parallel to and disposed above the length of the cable drum;

a monitoring arm having a structure defined by a pair of apertures and including a first end portion, a second end portion, and a center portion, disposed adjacent to and above the cable wrapped around the cable drum, the first end portion and second end portion slidably mounted in said apertures of said elongated bolt; and

electric switch means disposed adjacent the ends of the first end portion and second end portion of said monitoring arm, said electric switch means having contact arms for being engaged by said first end portion and said second end portion to open or close an electrical circuit as required to signal the operator, said electric switch means activated when contacted by the ends of the first end portion and second end portion of said monitoring arm when the center portion of said monitoring arm is contacted by the cable on the cable drum;

said electrical switch means includes an electric switch mounting bracket attached to said elongated bolt and a pair of electrical switches attached to said electrical switch mounting bracket, said electrical switches having said contact arms disposed adjacent the ends of the first end portion and second end portion of said monitoring arm;

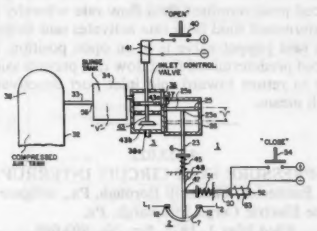
coil springs disposed around the first end portion and second end portion of said monitoring arm for biasing said monitoring arm toward the cable wrapped around the cable drum, the tension force of said springs overcome when the cable on the cable drum contacts the center portion of said monitoring arm thereby allowing said monitoring arm to be raised on said elongated bolt with the first end portion and second end portion of said monitoring arm contacting the contact arms of said electrical switches; and guide arms attached to and extending outwardly from said mounting bracket and positioned on both sides of the second end portion of said monitoring arm for guiding said monitoring arm when said monitoring arm is contacted by the cable; said mounting bracket having a structure defined by a vertical slot to raise or lower said elongated bolt.

4,213,020

PNEUMATIC OPERATING MECHANISM FOR A CIRCUIT-BREAKER

Willie B. Freeman, Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 26, 1977, Ser. No. 845,769
Int. Cl.[2] H01H *35/24*
U.S. Cl. 200—81 R **13 Claims**



1. A circuit-interrupter including a pair of cooperable separable contacts, at least one of which is movable, a pneumatic operating mechanism for effecting opening and closing motions of said one movable contact, said pneumatic operating mechanism including a main high-pressure gas-reservoir tank (32) and an inlet control valve (36), a movable driving piston reciprocally operable within a stationary operating cylinder, linkage means interconnecting said movable driving piston to said one movable contact, said inlet control valve controlling the admission of high-pressure operating gas from said main high-pressure gas-reservoir tank (32) to the driving side of the movabe driving piston for effecting the operation thereof, a separate surge tank (34) of appreciable volume interposed in the pneumatic operating mechanism extending between the main high-pressure gas-reservoir tank and the inlet control valve for increasing the initial high-pressure gas supplied to the driving piston, and there being no valve in said mechanism between said tanks, whereby pressure in the surge tank is substantially equal to that in said main tank to effect operation of the piston when the inlet control valve is opened.

4,213,021

INDICATING CHECK VALVE

Richard M. Alexander, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Continuation-in-part of Ser. No. 935,529, Aug. 15, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,698
Int. Cl.[2] H01H *35/38*
U.S. Cl. 200—81.9 M **5 Claims**

1. An indicating check valve comprising:

a. a valve body having a bore extending therethrough with

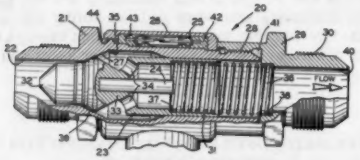
inlet and outlet ports for the passage of fluid flowing under pressure;

b. a poppet valve having a pressure side adjacent said inlet port and disposed within said valve body for movement in said bore for opening and closing said inlet port;

c. a magnet carried by said poppet valve on the side opposite said pressure side for movement therewith;

d. switch means associated with said valve body and responsive to movements of said magnet carried by said poppet valve;

e. biasing means disposed within said valve body for urging said poppet valve to a position closing said inlet port; and



f. an elongated cylindrical nose portion disposed on the pressure side of said poppet valve and extending into said inlet port, said nose portion including a reduced diameter cylindrical portion for correlating the travel of said poppet valve away from said inlet port by a first predetermined fluid flow rate and toward said inlet port by a reduced predetermined fluid flow rate whereby said first predetermined fluid flow rate activates said switch means when said poppet valve is in an open position, and said reduced predetermined fluid flow rate permits said poppet valve to return toward said inlet port deactivating said switch means.

4,213,022

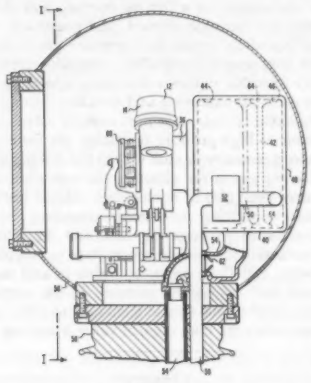
TWO-PRESSURE TYPE CIRCUIT INTERRUPTER

Werner S. Emmerich, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1978, Ser. No. 902,008

Int. Cl.[2] H01H *33/82*

U.S. Cl. 200—148 R **5 Claims**



1. A high compression two-pressure type circuit interrupter comprising a housing, a stationary contact within the housing, a movable contact within the housing and separable from the stationary contact to establish an arc, mounting means for mounting and moving the movable contact, means for directing a blast of an interrupting gas into the zone between the separating contacts to extinguish an arc and comprising a puffer cylinder and conduit means extending between the cylinder and said zone, the puffer cylinder being separated into two unconnected compartments by a pressure responsive divider, one compartment having an outlet port communicating with the conduit means and containing an arc extinguishing gas, the other compartment communicating with a source of pressurized fluid, and valve means for releasing the fluid into said other compartment in response to a current overload to push the gas from the one compartment to the zone.

4,213,023

HIGH FREQUENCY ENERGY APPARATUS WITH AUTOMATIC HEATING CYCLE CONTROL

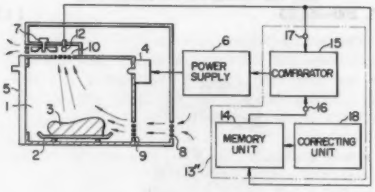
Kenji Satoh; Hajime Tachikawa, and Mitsuru Watanabe, all of Yokohama, Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

Filed Oct. 4, 1977, Ser. No. 839,257

Claims priority, application Japan, Oct. 6, 1976, 51/120040; Oct. 20, 1976, 51/125706

Int. Cl.[2] H05B *9/06*; G05D *23/20*

U.S. Cl. 219—10.55 B **25 Claims**



1. A high frequency energy apparatus for heating an object to be heated by using high frequency energy comprising:

a heating chamber in which the object is placed to be heated;

means for generating high frequency energy;

means for supplying the high frequency energy generated by said high frequency energy generating means to said heating chamber;

first temperature sensing means for sensing the temperature of selected one of air within said heating chamber and air flowing out of said heating chamber;

means for memorizing a temperature sensed by said first temperature sensing means at a predetermined time point;

comparing means for comparing a temperature being sensed by said first temperature sensing means with the value memorized in said memory means; and

means for controlling the supply of high frequency energy from said high frequency energy generating means in accordance with an output signal from said comparing means.

4,213,024

BUTT WELDING PROCESS

Eugene J. Costley, Coos Bay, Oreg., assignor to JDC Welding and Research, Inc., Coos Bay, Oreg.

Continuation-in-part of Ser. No. 755,080, Dec. 28, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 930,992

Int. Cl.[2] B23K *9/24*

U.S. Cl. 219—61 **2 Claims**

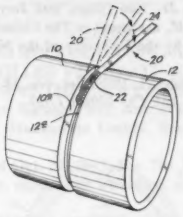
1. A method for butt welding pipe sections together, each pipe section having a beveled end, comprising:

positioning the pipe sections adjacent one another so that the beveled ends define a weld groove;

locating filler material of elongate dimension having a triangular cross-section so that an edge portion thereof protrudes through the weld groove;

fusing said filler material to said weld groove by striking an inert gas-shielded arc between an electrode and the beveled ends and advancing the electrode relative to said filler material so that a weld bead is formed; and

progressively angularly displacing said filler material about the weld puddle, simultaneously during advancement of



the electrode, so that an edge portion of said filler material protrudes through said weld groove to thereby maintain a gap at the bottom of the weld groove.

4,213,025

APPARATUS FOR CONNECTING METALLIC PARTS BY MEANS OF ARC FUSION WELDING

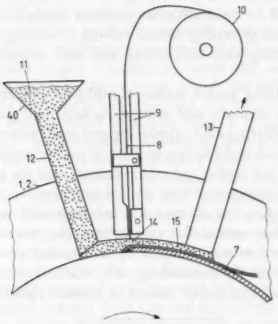
Gottfried Kuhnen, Oberrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Division of Ser. No. 809,122, Jun. 22, 1977. This application Dec. 14, 1978, Ser. No. 960,469

Claims priority, application Switzerland, Jul. 2, 1976, 8490/76

Int. Cl.[2] B23K *9/18*

U.S. Cl. 219—73.2 **12 Claims**



1. An apparatus for interconnecting metallic parts by arc fusion welding with a low volume welding seam (narrow gap welding) comprising:

means for feeding and guiding a welding wire;

means for infeeding welding powder;

said guiding means for the welding wire comprising a tool incorporating a wire feed clamp;

said wire feed clamp being pivotable transversely to the wire feed direction through a predetermined angle and fixedly adjustable in a desired position;

said wire feed clamp comprising:

arm means equipped with a guide groove extending essentially in the lengthwise direction of said arm means;

said arm means being formed of a material of high electrical conductivity;

a freely rotatably mounted lever arm containing a pivotable guide shoe equipped with a guide groove;

means interconnecting the lever arm with said arm means;

tube means arranged between the overhang arm means and the lever arm for infeeding the welding wire to a contact location of the wire feed clamp;

spring means;

means for adjusting said spring means;

said welding wire being pressed by the lever arm and guide shoe, under the action of the spring means, into the guide groove of said arm means;

clamping plate means;

support bolt means containing lengthwise extending bore means;

means for attaching said arm means and the lever arm and said clamping plate means to said support bolt means; and

pin means for securing said arm means at said support bolt.

4,213,026

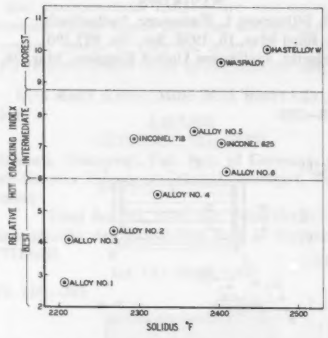
AGE HARDENABLE NICKEL SUPERALLOY WELDING WIRES CONTAINING MANGANESE

David S. Duvall, Cobalt; William H. King, Higganum, and William A. Owczarski, Cheshire, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 731,410, Oct. 12, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 914,720

Int. Cl.[2] B23K *35/30*

U.S. Cl. 219—75 **2 Claims**



1. A method for reducing cracking in the gaseous tungsten arc welding of nickel base superalloy articles using age hardenable nickel base filler material which consists essentially of 14–22% Cr, 5–15% Co, 0–5% Fe, 0–8% Mo, 0.7–3% Al, 0.5–4% Ti, 0–6% Ta+Cb, 0.5–3% Mn, 0–0.1% C, 0–0.05% B, 0–0.1% Zr, with the sum of Al+Ti exceeding 3%, balance essentially Ni.

4,213,027

METHOD OF TREATING ELECTRODES INTENDED FOR OPERATION IN ARGON AS CATHODES OF AN ELECTRIC ARC

David G. Bykhovsky, and Albert A. Voropaev, both of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Teknologichesky Institut Elektrosvarochnogo Oborudovania, Leningrad, U.S.S.R.

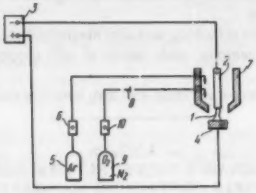
Continuation of Ser. No. 761,778, Jan. 24, 1977, abandoned. This application Mar. 6, 1979, Ser. No. 18,285

Int. Cl.[2] B23K *9/06*

U.S. Cl. 219—75 **5 Claims**

1. A method for treating electrodes operating in argon as electric arc cathodes in a welding process wherein said electrodes comprise a holder with an active insert made of a substance selected from the group consisting of elements of rare-earth metals, yttrium, alkali earth-metals, elements of Group IV A of the Periodic System, and compounds thereof, separately and in combination; the method comprising contacting the cathode area of the arc with a mixture of argon and an active gas selected from the group consisting of nitrogen or oxygen, for a period of time lasting at least 100 times less than

that of the period of operation of the electrode in argon alone, with the current not exceeding the upper limit of the working



current range, and the volumetric concentration of said active gas in the mixture varying from 0.1 to 100 percent.

4,213,028

ELECTRIC HEATING DEVICE FOR VEHICLE WINDOWS

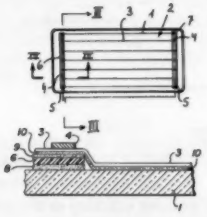
Arend Wolf, Wijverweg 1, Wassenaar, Netherlands

Filed Mar. 16, 1978, Ser. No. 887,390

Claims priority, application United Kingdom, Mar. 26, 1977, 12850/77

Int. Cl.[2] H05B *3/06*; H01C *1/012*; E06B *7/12*

U.S. Cl. 219—203 **10 Claims**



1. In a heating device for a glass surface or the like, of the type including a lattice arrangement of laterally-spaced electrically-conductive foil strips electrically connected in parallel at their ends by transversely-extending electrical terminals for coupling the strips to a source of direct current, the improvement comprising:

two elongated carrier strips each made of an electrically non-conductive material and having an adhesive layer on both sides thereof, said strips being securable to the glass surface by means of one of their adhesive layers in spaced-apart, generally parallel relationship so as to laterally delimit the surface area of the glass encompassed by the heating device;

said foil strips comprising a plurality of thin, electrically conductive, foil strips, cut from an arbitrarily divisible continuous strip supply, each of which has an adhesive layer on one side, said strips extending between and disposed generally normally to, said carrier strips and being secured to said carrier strips and the surface of the glass therebetween in spaced apart relationship by means of said adhesive layer thereof, the ends of each foil strip overlying said carrier strips; and

said terminals comprise two strip-shaped electrical conductors, one of said conductors being fastened onto a respective one of said carrier strips by the other adhesive layer on the carrier strip exposed between said foil strip ends, said conductors overlaying the ends of each of said foil strips and being in electrically conductive engagement therewith.

4,213,029

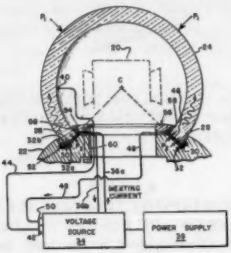
RADIATION TRANSMISSIVE HOUSING HAVING A HEATED LOAD BEARING GASKET

Donald L. Endicott, Jr., San Diego, and Jerry D. Stachiw, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 21, 1979, Ser. No. 13,719

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—209 **13 Claims**



1. Housing apparatus comprising:

a window comprising a spherical segment and formed of material which is transmissive to radiation of selected frequencies, said window having a seating surface;

mounting means for providing forces to support said window and to resist external pressure applied to said window, said mounting means having a bearing surface for transmitting said supporting and said pressure resisting forces;

heated bearing gasket means abutting said bearing surface and also abutting said seating surface, said gasket means for transferring said supporting and said pressure resisting forces from said bearing surface of said mounting means to said seating surface of said window, and for transferring selected amounts of heat to said window;

heat regulating means coupled between said window and said gasket means for controlling the amount of heat transferred to said window by said gasket means; and

holding means for maintaining said window, said mounting means and said gasket means in joined relationship.

4,213,030

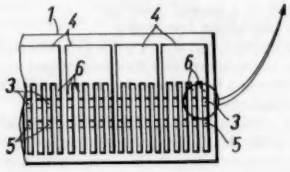
SILICON-SEMICONDUCTOR-TYPE THERMAL HEAD

Takao Kawamura, Osaka, and Kokichi Ishibitsu, Shiga, both of Japan, assignors to Kyoto Ceramic Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 21, 1977, Ser. No. 817,742

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—216 **9 Claims**



1. A silicon semiconductor type thermal head comprising:

a substrate of α-alumina ceramic single crystalline sapphire;

a silicon layer of high electrical resistance formed on the upper surface of said substrate; and

a plurality of exothermic dots defined by a plurality of ex-

posed areas of a silicon layer of low electrical resistance integrally formed on the high resistance silicon layer.

4,213,031
HEAT SEALING ROLLER HAVING A TEMPERATURE SELF-CONTROLLED PTC HEATING RESISTOR FOR WELDING THERMOPLASTIC FOILS

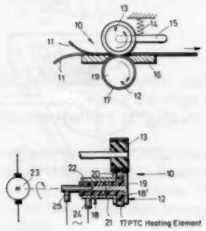
Karl-Heinz Färber, Giengen, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,299

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647444

Int. Cl.² H05B *3/10;* **B21B** *27/08;* **B30B** *15/34*

U.S. Cl. 219—244 **8 Claims**



1. In a welding device for sealing at least two superimposed foils of thermoplastic synthetic material having at least one electrically heated temperature-controlled sealing roller and a counterpressure organ cooperating with the sealing roller between which is a heated zone in which the foils are tightly welded while pressure is being applied, the improvement comprising the sealing roller equipped with a circular disk-like PTC (positive temperature coefficient) resistor which serves as the heating element and the temperature control, with the PTC resistor having a resistance characteristic which rises steeply in the range of the operating temperature of the sealing roller, the PTC resistor serving as the heating element being the effective part of the sealing roller which acts directly on the foils to be welded together, the disk-like PTC resistor having electrically conductive axially opposite end faces, each provided with a disk-like metallic contact surface rotatable with said resistor and in electrical contact with the end face of the resistor, and the welding device including means for supplying electric current for heating to the PTC resistor through the axial end faces thereof via said contact surfaces.

4,213,032
CONTROL SYSTEM FOR CHARGING AND DISCHARGING AN ELECTRIC STORAGE HEATER

Gunnar E. R. Olsen, and Poul C. C. Iversen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

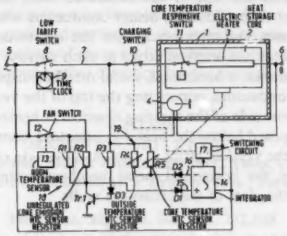
Continuation of Ser. No. 717,249, Aug. 24, 1976, abandoned. This application Mar. 10, 1978, Ser. No. 885,196

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1975, 2539117

Int. Cl.² H05B *1/02;* **F24H** *7/04;* **F24D** *11/00*

U.S. Cl. 219—364 **3 Claims**

1. An electric storage heater assembly comprising, a heat storage core, a low tariff period switch and a charging switch in series with said resistance heater, means including an integrator for operating said charging switch, a time clock for operating said low tariff switch, feed circuit means only effective when said tariff switch is open and being responsive to at least one environmental temperature indicative of discharge of heat from said core for charging said integrator, scanning circuit means, controlled by operation of said low tariff switch, for discharging said integrator, switching circuit means responsive to the discharge of said integrator for actuating said charging switch to terminate the charging period, said scanning circuit means including means responsive to at least one other environmental temperature whereby said switching circuit means actuates said charging switch to terminate the charging period at the end of a time period determined by the



charge on said integrator and said other environmental temperature, said environmental temperature responsive means of said scanning circuit means including temperature responsive NTC resistor means to vary the length of said time period inversely relative to said other environmental temperature.

4,213,033
ELECTRIC TOASTER

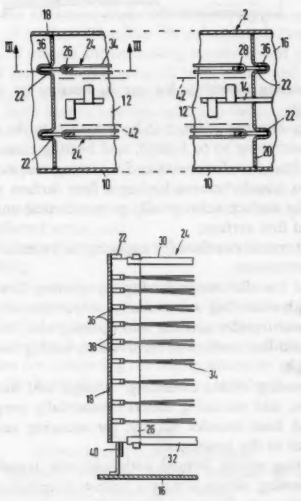
Otto Bjarsch, Traunreut, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,151

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1977, 7718602

Int. Cl.² H05B *1/00*

U.S. Cl. 219—385 **3 Claims**



1. In an electric toaster with a toasting chamber of rectangular-like shape with a length greater than the width, which chamber has a heater extending parallel to each long side of the toasting chamber and which heaters are bounded by crosswise walls on the two narrow sides, with the heaters, composed of insulating parts on which are disposed heater conductors,

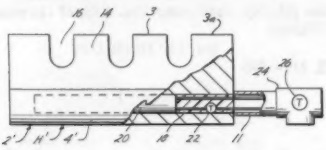
supported by the crosswise walls, the improvement comprising, having the crosswise walls on each narrow side of the toasting chamber with vertical slots, the heater being of unitary construction having a vertical strip made of insulating material at each narrow side of the toasting chamber, each vertical strip having recesses and legs at its end with the legs extending into the slot of the crosswise wall, said recesses being deeper than said slots, heater conductors which engage in the recesses out of contact with the crosswise wall and extend between the vertical strips at each narrow side of the toasting chamber, a horizontal, metal member disposed above the heater conductors, connecting the top of the vertical strips at each narrow side of the toasting chamber, a horizontal metal member disposed below the heater conductors, connecting the bottoms of the vertical strips at each narrow side of the toasting chamber, the horizontal metal members ending at a distance from the slots of the crosswise walls.

4,213,034

CONDUCTION HEATING ASSEMBLY

David C. Goss, and Richard A. Hageman, both of San Marcos, Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.

Filed Jul. 3, 1978, Ser. No. 921,265
Int. Cl.[2] H05B 3/58
U.S. Cl. 219—535 **3 Claims**



1. A heating assembly for use in heating an instrument, comprising:

a heating element adapted to be mounted to the exterior of the instrument to be heated, said heating element including a heat transfer means and a heating means;

said heat transfer means having a first surface and a heat transfer surface substantially perpendicular and adjacent to said first surface;

said heat transfer surface for engaging an external surface of the instrument;

said heat transfer means having an opening formed therethrough extending substantially perpendicularly through said heat transfer surface, said opening also formed adjacent said first surface to receive a mounting means therethrough;

said mounting means extending through said heat transfer surface, said mounting means substantially perpendicular to said heat transfer surface for securing said heating element to the instrument;

said heating means formed with said heat transfer means, said heating means having a hollow longitudinal portion with the axis thereof substantially parallel to said first surface at the midpoint thereof and substantially parallel to the plane of said heat transfer surface for receiving an electrical heating element;

said opening disposed between said first surface and said heating means; and

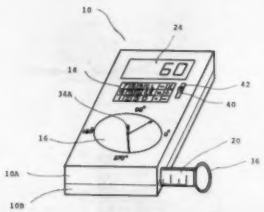
said electrical heating element to provide heat to the heating means.

4,213,035

ELECTRONIC COMBINED PROTRACTOR AND CALCULATOR CAPABLE OF MEASURING LENGTH AND ANGLE OF AN OBJECT

Isamu Washizuka, Kyoto, and Nobuyasu Kakutani, Yao, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1977, Ser. No. 858,411
Claims priority, application Japan, Dec. 10, 1976, 51/148880; Dec. 10, 1976, 51/148881
Int. Cl.[2] G06M 3/14; G01B 3/12
U.S. Cl. 235—92 DN **23 Claims**



1. An electronic combined protractor and scale comprising:

a housing;

an extensible member means coiled within said housing for attachment to an object to be measured;

two index means for respective alignment with the two sides of an angle to be measured, one of said two index means being arranged on the lower half of said housing;

a rotatory reel means for accommodating and storing said extensible member, said rotatory reel means fixedly supporting the other of said two index means in a frame thereof and having a plurality of slits therein;

a detector means responsive to rotation of said rotatory reel means for sensing the rotation of said rotatory reel means and for providing counting signals in response thereto; and

a controller means for receiving said counting signals and for generating a plurality of control signals the number of control signals generated being proportional to the amount of rotation of the other of said two index means, said controller means further comprising an angle measure counter means for converting said counting signals into a first control signal indicative of angular measure and representing the number of degrees of said angle to be measured;

a decimal counter means for converting said counting signals to an intermediate control signal indicative of the length of said extensible member when pulled out from said housing;

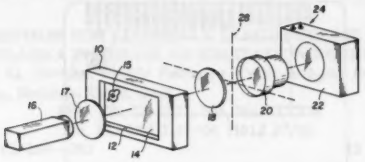
compensation means responsive to said intermediate control signal for modifying said intermediate control signal to generate a second control signal, thereby compensating for the variation in rotational velocity of said rotatory reel means when said extensible member is pulled out from said housing, said second control signal representing the compensated true length of said extensible member when pulled out from said housing; and

digital display means for displaying said first and second control signals, respectively.

4,213,036
METHOD FOR CLASSIFYING BIOLOGICAL CELLS

Richard E. Kopp, Smithtown ; Joseph Lisa, Ronkonkoma; Jay Mendelsohn, Old Bethpage; Benjamin J. Pernick, Brooklyn; Harvey Stone, Flushing, and Martin R. Wohlers, Cold Spring Harbor, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 581,799, May 29, 1975, abandoned.
This application Dec. 27, 1977, Ser. No. 864,495
Int. Cl.[2] G06M *11/02*
U.S. Cl. 235—92 PC 6 Claims



1. A method for recognizing normal and cancerous cell structures, said method comprising the steps of:

obtaining a diffraction pattern of light representative of a cell image;

generating first signals from the diffraction pattern of light of a level of radial energy over a preselected limited frequency range from selected portions of said diffracted pattern of light and from the total energy of said diffraction pattern of light;

generating second signals of each frequency used to obtain signals of a level of radial energy at each individual frequency used;

generating a sequence of signals representative of a multiple of first signals of level of radial energy and the square of said second signals of the individual frequency used where said first signals are derived;

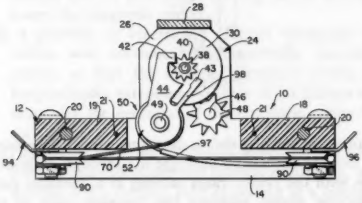
generating a third signal representative of the slope of the sequence of signals; and

displaying normal or cancerous indication from differences in said third signal between cancerous and normal cell structures of the slope of said sequence of signals representing radial intensity at a radial frequency.

4,213,037
ELECTRICAL COUNTING MECHANISM

Donald W. Fleischer, Wethersfield, and Einar Asmundsson, Middle Haddam, both of Conn., assignors to Veeder Industries Inc., Hartford, Conn.

Filed Oct. 19, 1978, Ser. No. 952,716
Int. Cl.[2] G01C *22/00;* G06M *1/04*
U.S. Cl. 235—92 B 4 Claims

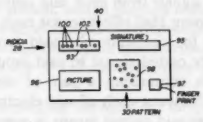


1. In an electrical counting device having a rotary counter and electrical indexing means for indexing the rotary counting in stepwise fashion comprising drive means mounted for predetermined oscillation in opposite operative directions thereof for indexing the counter, spring means biasing the drive means in one operative direction thereof, and electrical actuating means operable upon energization thereof to actuate the drive means in the opposite operative direction thereof against the bias of the spring means, the improvement wherein the electrical actuating means comprises an elongated tension wire conductor having a first fixed end and a second end connected to the drive means to retain the drive means against oscillation in its said one operative direction by the spring means, and electrical connection means connected to the conductor wire for conducting an electrical current through the wire to heat and thereby lengthen the wire for oscillating the drive means in its said one operative direction by the spring means and, upon subsequent cooling of the wire for oscillating the drive means in its opposite operative direction by the tension wire.

4,213,038
ACCESS SECURITY SYSTEM

Daniel Silverman, 5969 S. Birmingham Ave., Tulsa, Okla. 74105, and Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068

Filed Dec. 20, 1976, Ser. No. 752,568
The portion of the term of this patent subsequent to Jun. 18, 1991, has been disclaimed.
Int. Cl.[2] G06K *5/00;* G07F *7/08*
U.S. Cl. 235—382 12 Claims



1. An access security system for monitoring access by authentication of a control member on presentation comprising

(a) a bank of unique authenticating master coded micropatterns of micro altered areas of web means and a corresponding group of macropatterns of machine readable indicia, each indicia corresponding to selected micropatterns and providing an index to the corresponding micropattern;

(b) a plurality of control members, each such member having at least one of said macropatterns of machine readable indicia and the corresponding coded micropattern of micro altered areas; and

(c) means for authenticating a presented control member comprising

(1) means for reading said macropatterns,

(2) means responsive to said means for reading, including means for selecting the corresponding micropattern from said bank indexed by said macro indicia; and

(3) means for comparing the micropattern on said member with the indexed micropattern in said bank.

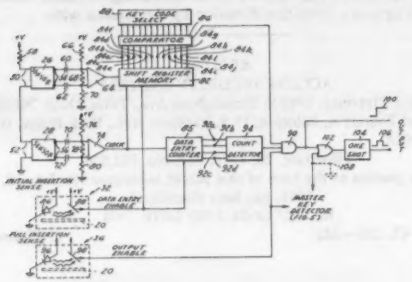
4,213,039
DYNAMIC CARD READER

Donald S. Schasser, Pontiac, Mich., assignor to Automatic Parking Devices, Inc., Farmington, Mich.

Filed Oct. 16, 1978, Ser. No. 951,760
Int. Cl.[2] G06K *7/08, 19/06;* G11B *25/04, 5/38*
U.S. Cl. 235—449 17 Claims

5. In a card reader for use with a card carrying indicia comprising magnetic zones in said card readable in the form of a binary code at preselected parallel track locations thereon and including means for providing a slot for receiving a card such

that said track locations are parallel to the direction of card insertion into said slot and means disposed at preselected locations adjacent said slot and responsive to magnetic indicia on a card inserted into said slot for providing a binary coded signal as a function of said indicia, the improvement wherein said means comprises a plurality of magnetic sensor means disposed laterally of said slot one adjacent each said preselected parallel track location for providing sensor signals in response to proximity of magnetic indicia adjacent the corresponding said sensor means, output means for providing a reader output



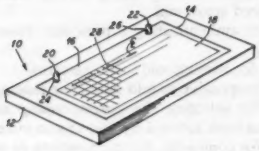
signal in response to said sensor signals and including input means for receiving signals from each said sensor means, said sensor means comprising Hall effect sensor each having a pair of signal electrodes for connection to said input means for providing said binary coded signal to said input means, and differentiating means comprising a pair of capacitors connected in series one between each of said electrodes and said input means such that said output means is responsive to dynamic changes in magnetic polarity adjacent each said sensor means as a card is inserted into said slot.

4,213,040

DIGITAL MICROFICHE AND APPARATUS FOR ACCURATELY POSITIONING THE MICROFICHE

Phillip E. Gokey; Donovan W. Hurlbut; Emma Lou Sederholm, and Angel F. Terry, all of Whitewater, Wis., assignors to News Log International, Incorporated, Whitewater, Wis.

Filed Jul. 7, 1978, Ser. No. 922,798
Int. Cl.[2] G06K *13/24, 7/14, 19/06*
U.S. Cl. 235—476 **44 Claims**



1. A digital microfiche for use with an optical scanner, comprising:

a first storage area bearing optically retrievable first information arranged in a plurality of parallel rows;

a second storage area bearing identification codes for at least one of said rows and first alignment codes for said one row; and

a third storage area bearing second alignment codes for said one row identical to said first alignment codes; and

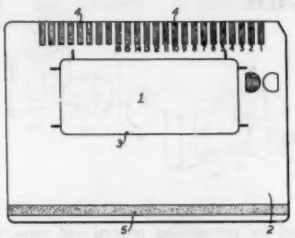
a centering mark, said centering mark located on the centerline of said one row.

4,213,041

MASTER CARDS FOR HECTOGRAPHIC PRINTING

Colin H. S. Smith, Cambridge, England, assignor to Data Card (U.K.) Limited, Hampshire, England

Filed Apr. 17, 1978, Ser. No. 897,195
Claims priority, application United Kingdom, Apr. 20, 1977, 16321/77
Int. Cl.[2] G06K *19/00;* G11B *25/04;* B41M *5/00;* G06K *19/02*
U.S. Cl. 235—487 **13 Claims**



1. A method for making a master card for use in a hectographic printing machine, comprising the steps of

(a) securing a layer of carbon receiving paper material between a pair of layers of synthetic plastic material, said layers of synthetic plastic material containing aligned window apertures, respectively, said paper layer extending completely across said aligned window apertures;

(b) applying a magnetically encoded strip on the outer surface of one of said synthetic plastic layers; and

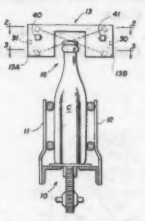
(c) printing a plurality of information-bearing spaced opaque bars on said outer surface, whereby said card may be used to control the operation of a hectographic printing machine.

4,213,042

CONTAINER CHIPPED CROWN RING DETECTOR

Donald J. Beach, Warson Woods, and Robert J. Smith, Florissant, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Oct. 2, 1978, Ser. No. 947,771
Int. Cl.[2] G01N *21/32*
U.S. Cl. 250—223 B **8 Claims**



1. Container crown ring defect detector means comprising: means for moving containers in single file through an inspection station with the crown rings moving in a common path; defect detection means adjacent the common path of the crown rings in the inspection station, said defect detection means incorporating a plurality of pairs of elements in which there is a light emitter and a light receiver in each pair in beam path alignment through the container crown rings moved through the inspection station; circuit means connected to said plurality of pairs of elements for energizing said light emitters in a predetermined order and for simultaneously monitoring said receivers in the order of energization of said light emitters;

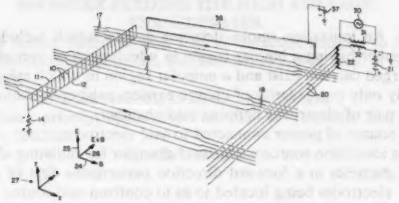
and means connected with said receivers for rejecting a container associated with the activation of a receiver by light from its paired light emitter.

4,213,043

METHOD FOR FLOWING A LARGE VOLUME OF PLASMA THROUGH AN EXCITATION REGION

John M. Dawson, Pacific Palisades, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 20, 1977, Ser. No. 817,328
Int. Cl.[2] B01D *59/44*; H01J *27/00*
U.S. Cl. 250—283 **13 Claims**



1. In an apparatus for separating a selected isotope of an element from other isotopes thereof, the combination comprising:

(a) an elongated substantially evacuated container having a longitudinal axis;

(b) means for providing a magnetic field extending substantially parallel to said axis within said container;

(c) means for providing, within said magnetic field, a substantially neutral plasma including ions of an element having at least two isotopes;

(d) means applying an alternating electric field to at least a portion of the plasma for imparting more kinetic energy to selected-isotope ions than to other-isotope ions so that the selected-isotope ions travel in helical paths of increasing diameter within the magnetic field;

(e) means for augmenting the magnetic field strength in a region adjacent each end of said container to thereby provide a pair of longitudinally spaced magnetic mirrors for reflecting and containing the more energetic selected-isotope ions while allowing the less energetic other-isotope ions to pass longitudinally out of the region between the magnetic mirrors;

(f) a plurality of electrically distinct electrodes disposed within said container for electrically contacting the plasma so that the electric potentials within different longitudinally extending portions of the plasma are determined by the potential of the electrode contacting each such portion;

(g) means for applying a different direct-current potential to each of said electrodes and thereby producing, within the plasma, a d-c electric field extending in a predetermined direction substantially normal to the longitudinal axis so that helically orbiting charged particles are subjected to an $E \times B$ drift force and caused to move in a direction substantially normal to that of both the magnetic field and the electric field; and

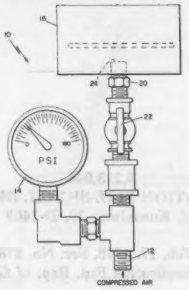
(h) collection means, located adjacent the plasma at the side thereof toward which said $E \times B$ drift force is directed, for collecting ions which have been moved transversely of the plasma by the action of said $E \times B$ drift force.

4,213,044

METHOD AND APPARATUS FOR DETERMINING OIL MIST IN COMPRESSED AIR

Kenneth A. Perrotta, Methuen, Mass., assignor to Whatman Reeve Angel Limited, Maidstone, England

Filed Dec. 18, 1978, Ser. No. 970,246
Int. Cl.[2] G01T *1/167, 1/169*
U.S. Cl. 250—301 **21 Claims**



1. A method of determining the amount of oil mist in a compressed-air stream, which method comprises:

(a) bleeding a small sample of compressed air from the compressed-air line through a bleed orifice of predetermined dimensions for a defined bleed-time period at a known pressure;

(b) directly impinging the bleed-air sample in a substantially perpendicular direction onto the surface of a plate spaced apart a predetermined distance from the orifice, the plate containing an ultraviolet phosphor indicator, which phosphor indicator is inhibited in fluorescence by the oil mist in the compressed-air sample;

(c) comparing the coated plate on which the bleed-air sample has been impinged with a standard plate under ultraviolet radiation sufficient to fluoresce the ultraviolet phosphor indicator; and

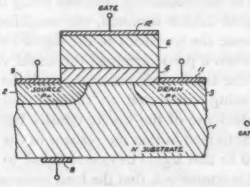
(d) determining from such comparison of said plates the amount of oil mist present in the compressed-air stream.

4,213,045

METAL NITRIDE OXIDE SEMICONDUCTOR (MNOS) DOSIMETER

Ronald G. Fraass, USAF Academy, Colo., and Roger W. Tallon, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 29, 1978, Ser. No. 937,909
Int. Cl.[2] G01T *1/24*
U.S. Cl. 250—370 **5 Claims**



1. A dosimeter for measuring ionizing radiation doses of X-ray, gamma ray or E-beam energy, comprising:

a. a metal nitride oxide semiconductor (MNOS) transistor capable of storing an electric charge within its gate structure, and further capable of dissipating that stored charge

with separable and independent effects attributable to the time elapsed and the total ionizing radiation dose imposed;

b. a voltage source attachable to the gate and substrate of the MNOS transistor to create a stored charge; and

c. a device for measuring the voltage at the gate of the transistor required to produce a prescribed small current flow between the source and drain of the MNOS transistor, for measuring the undissipated stored charge.

4,213,046

IONIZATION FIRE-SIGNAL DEVICE

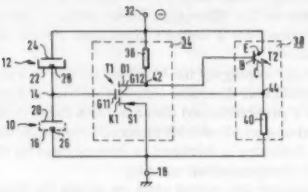
Hartwig Beyersdorf, Konsulweg 29, D-2409 Scharbeutz, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,803

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1977, 2707409

Int. Cl.² G08B *17/10*

U.S. Cl. 250—381 **11 Claims**



1. An ionization fire-signal device comprising a pair of signal device terminals, an ionized measuring chamber penetrable by the ambient air, a reference element series connected with the measuring chamber between the signal device terminals, an amplifier stage connected between the signal device terminals and controlled by the potential at the junction of the measuring chamber and the reference element, the amplifier stage including a field-effect transistor, said field-effect transistor having a separate substrate terminal and forming a main current path, said amplifier stage having a resistor in series with the main current path of the field-effect transistor, and a signal circuit connected between the signal device terminals, said signal circuit including a transistor and a load resistor connected in series with each other, the signal circuit being connected so as to be controlled by the voltage drop across the resistor of the amplifier stage, said measuring chamber having a pair of electrodes, one electrode of the measuring chamber being directly connected to one signal device terminal, the amplifier stage being connected to cause the transistor of the signal circuit to become conductive when a predetermined threshold value of the smoke content of the ambient air passes through the chamber, said transistor being connected to remain conductive during a subsequent decrease of the smoke density below the threshold value, characterized in that the resistor of the amplifier stage is connected to that signal device terminal to which the reference element is connected, that the load resistor of the signal circuit is connected to that signal device terminal to which one electrode of the measuring chamber is connected, and that the substrate of the field-effect transistor is connected so that said field-effect transistor remains conductive during said subsequent decrease of said smoke density below said threshold value.

4,213,047

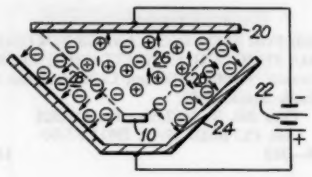
SMOKE DETECTOR HAVING UNIPOLAR IONIZATION CHAMBER

Herbert W. McCord, Warren, N.J., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 25, 1978, Ser. No. 954,395

Int. Cl.² H01J *39/28*

U.S. Cl. 250—381 **8 Claims**



1. An ionization smoke detector device which includes a chamber having a bipolar region in which pairs of oppositely charged carriers exist and a unipolar region in which substantially only one polarity of charge carriers exist comprising:

a pair of electrodes defining said chamber;

a source of power connected to said electrodes;

an ionization source within said chamber for radiating alpha particles in a forward direction pattern, the first of said electrodes being located so as to confront said source at a distance therefrom so as to obstruct said pattern, thereby to produce a conical pattern of radiation;

the second of said electrodes being shaped or formed in a truncated conical or dish-like configuration so as to conform to said conical radiation pattern, said second electrode being behind the resultant conical radiation pattern, whereby said unipolar region is produced adjacent said second electrode.

4,213,048

METHOD AND CIRCUIT ARRANGEMENT FOR IMPROVING THE RADIOLOGICAL DEFINITION OF THE FOCAL SPOTS OF X-RAY TUBES

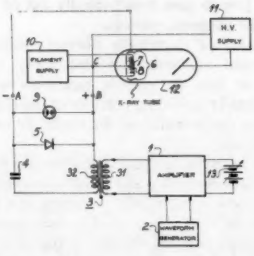
Dang T. Quang; Jacques Leguen, and Jacques Delair, all of Paris, France, assignors to Compagnie Generale de Radiologie, Paris, France

Filed Oct. 18, 1978, Ser. No. 952,352

Claims priority, application France, Oct. 21, 1977, 77 31743

Int. Cl.² H05G *1/00*

U.S. Cl. 250—402 **10 Claims**



1. A method for improving the definition of the focal spot of an X-ray tube having, inside of an evacuated, vacuum-tight envelope, a cathode made up from a filament for emitting electrons, an anode for accelerating and receiving said emitted electrons and for emitting an X-ray beam, and a concentrating electrode surrounding said filament on its side opposite to the

one facing the anode for forming an electron beam directed towards the latter, a high-voltage direct-current supply being respectively connected to said anode and cathode, a low-voltage supply being connected to supply heating current to the filament and a bias voltage supply being connected to said concentrating electrode and said filament for controlling the shape of the emitted electron beam, while said tube is being operated, said method consisting of modulating said bias voltage by means of an alternating-current periodic voltage waveform having a frequency of at least ten kilohertz for said concentrating electrode bias voltage to periodically vary between a minium and a maximum negative value relatively to said cathode, said minimum value being at least equal to zero, during each period of operation of said tube, whereby to periodically vary the size and shape of the focal spot substantially independently of the anode current intensity.

4,213,049

X-RAY DIAGNOSTIC GENERATOR COMPRISING AN INVERTER FEEDING THE HIGH VOLTAGE TRANSFORMER

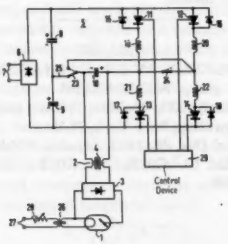
Gerd Seifert, Spardorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,862

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802505

Int. Cl.² H05G *1/30*

U.S. Cl. 250—408 **2 Claims**



1. An x-ray diagnostic generator comprising an x-ray tube, a high voltage transformer feeding the x-ray tube, an inverter connected to the input of the high voltage transformer, a DC source comprising a rectifier energized by AC mains, said DC source having respective poles for feeding the inverter, characterized in that the d.c. voltage source (**8, 9**) has an output conductor (**25**) with an electric potential midway between the electric potentials of the respective poles thereof, the inverter (**5**) has a pulsing means (**11** through **22**) for alternately connecting said transformer input with the poles of the d.c. voltage source (**8, 9**), said pulsing means including two branch circuits each extending between said poles and having respective midpoints, and in that change-over switching means (**23, 24**) are present by means of which said transformer input in a first switching condition of the switching means is connected between said output conductor (**25**) of the d.c. voltage source (**8, 9**) and the midpoints of the branch circuits which are connected together and in a second switching condition of said switching means is connected between the midpoints of said branch circuits which are disconnected from each other the change-over switching means (**23, 24**) in said second switching condition connecting said branch circuits so that said transformer is simultaneously energized by both poles of the DC source, and in said first switching configuration connecting the midpoints of the branch circuits (**11, 15, 19; 13, 17, 21**; and **12, 16, 20; 14, 18, 22**) so that said transformer is alternately energized by each pole of said DC source.

4,213,050

SERVO CONTROL FOR X-RAY TOMOGRAPHY

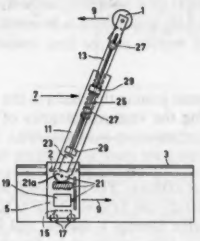
Gerrit J. Meek, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 12, 1978, Ser. No. 905,224

Claims priority, application Netherlands, Jun. 16, 1977, 7706616

Int. Cl.² H05G *1/00*

U.S. Cl. 250—445 T **6 Claims**



1. In an examining device comprising:

a source of penetrating radiation; a radiation detector which is movable in a plane; a column having a first end coupled to the source and a second end coupled to the detector, the column comprising two column portions which are movable with respect to each other along the longitudinal direction of the column; movement means which function to move the column portions with respect to each other; swiveling means which function to swivel the column about an axis which extends perpendicular to the longitudinal direction of the column, parallel to and substantially in the movement plane of the raidation detector; a position detector which produces a feedback signal which is a measure of the position of the two column portions with respect to each other; drive circuit means which function to produce an angle signal which is a function of the angle α between the longitudinal direction of the column and a line perpendicular to the movement plane of the detector; and a control circuit having an output connected to operate the movement means, a first input connected to receive the feedback signal and a second input connected to receive the angle signal; the improvement wherein:

the drive circuit means further function to generate a correction signal which is substantially proportional to the product of the angle α multiplied by the rate of change of the angle α, d α/dt, and to supply the sum of the angle signal and the correction signal to the control circuit.

4,213,051

DUAL ACTING SLIT CONTROL MECHANISM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Gustav L. Struthoff, Seal Beach, Calif.

Filed Sep. 8, 1978, Ser. No. 940,689

Int. Cl.² H01J *9/38*; G21F *5/04*

U.S. Cl. 250—457 **8 Claims**

1. An apparatus for control of two independent mechanisms within a vacuum environment comprising:

a vacuum chamber;

a single opening defined in said vacuum chamber;

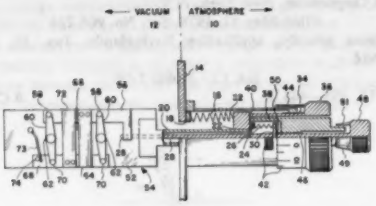
at least two shafts carried by said vacuum chamber and having portions thereof projecting into said chamber through said single opening;

means for moving each of said shafts independently relative to said vacuum chamber and relative to each other;

a collinator frame means of a mass spectrometer within said vacuum chamber attached to and operated by the first of said shafts;

slit adjustment means of a mass spectrometer within said

vacuum chamber attached to and operated by the second of said shafts; and



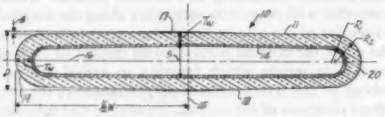
vacuum seal means joining the shafts to the vacuum chamber for maintaining the vacuum integrity of the chamber.

4,213,052

MINIATURE RADIOACTIVE LIGHT SOURCE AND METHOD OF ITS MANUFACTURE

Thomas E. Caffarella; George J. Radda, and Harry H. Dooley, Jr., all of Tucson, Ariz., assignors to American Atomics Corporation, Tucson, Ariz.

Filed Jun. 19, 1978, Ser. No. 916,876
Int. Cl.[2] F21K *2/00*
U.S. Cl. 250—462 **12 Claims**



1. A miniature radioactive light source comprising:
a glass tube laser sealed at its ends, the glass tube having an elongated cross section, two wide side faces, and two narrow side faces;
a radioactive gas contained in the tube; and
an energy transducer in the tube responsive to the gas, the improvement characterized in that the narrow side faces are thicker than the wide side faces and the ratio of the total glass thickness of the wide side faces to the spacing between the wide side faces is approximately 0.7.

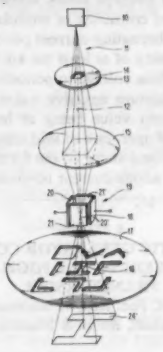
4,213,053

ELECTRON BEAM SYSTEM WITH CHARACTER PROJECTION CAPABILITY

Hans C. Pfeiffer, Ridgefield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 823,352, Aug. 10, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,511
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—492 A **5 Claims**

1. An electron beam column adapted for writing entire characters or portions thereof on a wafer comprising
a source directing a beam of electrons along a column axis toward a target area where said wafer is located,
first aperture means having a rectangular aperture formed therein for intercepting portions of the beam to form a beam cross section corresponding to the aperture,
character aperture means spaced along said axis downstream of the first aperture means having a plurality of apertures formed therein of the shape of entire characters or portions of characters, at least some of the apertures being oriented at off axis locations with respect to the said column axis,
means for focusing the image of the first aperture means in the plane of the second aperture means, and for focusing the image of the source between said apertures,
deflection means located between the first aperture means and the character aperture means for selectively deflecting the rectangular image of the first aperture to intercept one or more apertures or portions thereof of the character aperture means to form a composite image of the first aperture image and the intercepted portions of the apertures of the character aperture means,



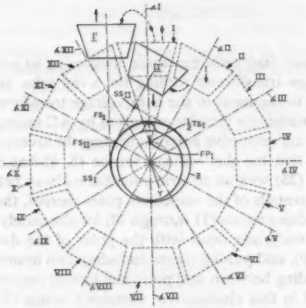
means for focusing the composite image in a target area, and compensating means located between the lens means and the second aperture means for correcting imperfections in the target image due to spherical aberration caused by deflection of the beam through off axis apertures of the character aperture means.

4,213,054

TRANSVERSE SECTION BRAIN IMAGER SCANNING MECHANISM

Edward J. Doherty, III, Halifax, Mass., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,016
Int. Cl.[2] G02B *5/00*; G01T *1/20*
U.S. Cl. 250—505 **1 Claim**



1. A scanning apparatus for an array of highly focused collimators comprising a base plate having (i) a plurality of first tangent drive slots arranged symmetrically about and equidistant from an axis normal to said base plate with each slot being tangent to a common circle centered on said axis (ii) a first prime mover drive slot parallel to one of said tangent drive slots and spaced further from said axis than said parallel tangent slot; a rotatable disk member rotatably engaged to said base plate on one side thereof being rotatable about said normal axis, said disk member having (i) a plurality of equally angularly spaced radially extending translation slots each of which overlaps one of said tangent drive slots (ii) a driver member affixed to said disk having a radially extending slot outward

from and in alignment with one of said translation slots and overlapping said first prime mover drive slot; a plurality of equally angularly spaced radially aligned guide means mounted on said base plate on the side opposite from said disk, each of said guide means being arranged opposite and extending in a direction normal to one of said tangent drive slots, with alternate guide means being located radially inward from said tangent drive slots and the remaining guide means being located radially outward from said tangent drive slots; a plurality of track members respectively arranged transverse to and slidably mounted on said guide means; a plurality of carriages respectively mounted on said track means, the carriages mounted on radially inward guide means having outwardly extending slotted members parallel to said guide means and arranged overlapping a respective tangent drive slot and the carriages mounted on radially outward guide means having inwardly extending slotted members parallel to said guide means and arranged overlapping a respective tangent drive slot; a drive block slidably mounted in each tangent drive slot and engaging an overlapping slotted member of a carriage on one end and an overlapping translation slot of the disk member on the other end, a prime mover drive block slidably mounted in the first prime mover drive slot engaged to the radially extending overlapping slot of said driver member; first driving means engaged to said first prime mover drive block to cause said prime mover drive block to travel a predetermined distance in said first prime mover drive slot and rotate said disk member and impart a predetermined tangential travel motor to said carriages; a plurality of engaged adjacently oppositely rotating bevel gears arranged radially inward from said tangential drive slots and said track members, each of said bevel gears being respectively engaged to a radially adjacent track member by a threaded coupling for imparting alternate inward and outward radial motion to said track members; second driving means engaged to a threaded coupling of only one said threaded coupling; and a plurality of inwardly focused collimators respectively mounted on said carriages to provide a circular array of closely adjacent collimators when said track means are at a predetermined common distance from said tangent drive slots and said carriages are centered with respect to their respective predetermined tangential travel.

4,213,055

IMAGE INTENSIFIER TUBE

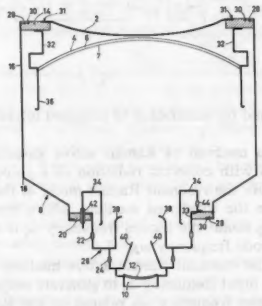
Joost E. Schrijvers, and Martinus W. A. Boers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,551

Claims priority, application Netherlands, Oct. 24, 1977, 7711633

Int. Cl.² G01T *1/00*; H01J *31/50*

U.S. Cl. 250—483 **13 Claims**



1. An image intensifier tube comprising:

an envelope which includes a jacket, a metal foil entrance window, and an exit window;

an entrance detection screen, mounted in the envelope adjacent to the entrance window;

an exit screen, mounted in the envelope adjacent to the exit window;

an electron-optical system mounted in said envelope for imaging electrons, emerging from the entrance detection screen, on the exit screen;

wherein the envelope is provided with at least one reinforcement in the form of a supporting ring connected to the entrance window and to the jacket in a vacuum-tight manner.

4,213,056

METHOD AND APPARATUS FOR DETERMINING THE STATE OF INTERLACING IN INTERLACED MULTIFILAMENT YARNS

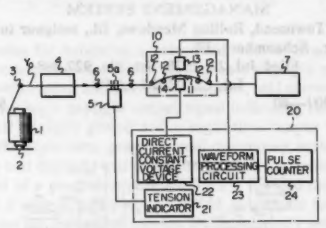
Seiji Matsumura, and Nobuo Kusumoto, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sep. 7, 1978, Ser. No. 940,482

Claims priority, application Japan, Sep. 12, 1977, 108901; Sep. 12, 1977, 108902

Int. Cl.² G01N *21/30*

U.S. Cl. 250—559 **24 Claims**



1. A method for determining the state of interlacing in interlaced multifilament yarns, which comprises causing an interlaced multifilament yarn to run while being in contact with a contact member under a predetermined contact pressure, thereby to produce temporary changes of the configuration in the yarn according to the state and structure of the yarn, detecting the changes of the configuration in the form of time series values and processing the detected values to determine interlacing characteristics of the yarn.

4,213,057

WIND ENERGY CONVERSION DEVICE

Endel Are, 119 E. Lucy St., Florida City, Fla. 33034

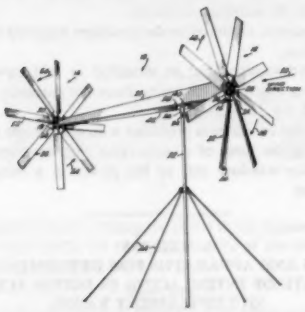
Filed May 8, 1978, Ser. No. 903,487

Int. Cl.² F03D *1/02*

U.S. Cl. 290—44 **23 Claims**

1. A wind energy conversion device to convert the wind energy to electrical energy comprising a main elongated generally horizontally disposed housing, a generator in said housing including inner and outer rotors, a front end multi-bladed propeller, journaled through a front end portion of said housing and being directly coupled to a first of said inner and outer rotors, said blades of said front end propeller being pitched in a first direction to rotate said first rotor in a first direction when said front propeller is exposed to and rotated by wind pressures; a rear end multi-bladed propeller, journaled through a rear end of said housing and being directly coupled to a second of said inner and outer rotors, said blades of said rear end propeller being pitched in a second direction to rotate said second rotor in a second direction, opposed to said first direction of said first rotor, when exposed to and rotated by the wind pressures; means to transmit electrical energy generated

by said rotation of the first and second rotors of said generator to a remote location and means to support said housing at a



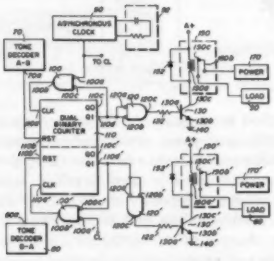
predetermined elevation above ground level for proper exposure to prevailing wind forces.

4,213,058

LOAD SHEDDING TIMER FOR A POWER MANAGEMENT SYSTEM

Greg M. Townsend, Rolling Meadows, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 21, 1978, Ser. No. 927,268
Int. Cl.[2] H02J *13/00*
U.S. Cl. 307—40 **5 Claims**



1. In a power management system wherein a remote location at a power load site is responsive to a command from a central controller to shed the load for a time interval determined by a timer, an improvement in said timer comprising:

timing means responsive to said central controller command to cause the load to be shed for a random time period between predetermined minimum and maximum time limits.

4,213,059

POWER SWITCHING CIRCUIT

Peter Deacey, Beaconsfield, Canada, assignor to PDM Electrical Products Ltd., Quebec, Canada

Filed Aug. 28, 1978, Ser. No. 937,288
Claims priority, application Canada, Sep. 12, 1977, 286491
Int. Cl.[2] H01H *51/27*
U.S. Cl. 307—41 **6 Claims**

1. A power switching circuit comprising

(a) a base plate carrying a first annular slip ring having a gap forming a break in continuity,

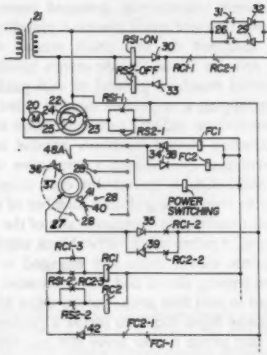
(b) an isolated contact on the base plate within the gap at the same radius as the ring,

(c) a second continuous slip ring concentric with the contact ring,

(d) a contact arm driven by a motor connecting the second ring to the contact ring,

(e) means connecting the first ring and the second ring in series with a motor across a source of a.c. current, whereby current can be fed to the motor until the contact arm reaches the gap,

(f) a third continuous annular slip ring concentric with the first and second rings,



(g) a multiplicity of contacts in a ring at equal radii from the centre of the first and second rings,

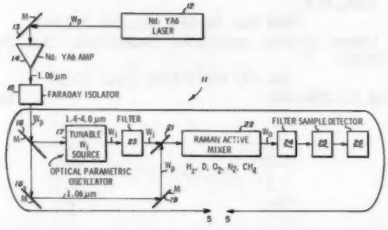
(h) means connecting the third slip ring and each of the contacts in sequence as the motor rotates, whereby external circuits connected individually to each of the contacts are energized once as the motor rotates, the motor stopping when the contact arm reaches said gap.

4,213,060

TUNABLE INFRARED SOURCE EMPLOYING RAMAN MIXING

Robert L. Byer, Stanford, and Richard L. Herbst, Menlo Park, both of Calif., assignors to The Board of Trustees of Leland Stanford University, Stanford, Calif.

Filed Feb. 14, 1977, Ser. No. 768,275
Int. Cl.[2] H03F *7/00*
U.S. Cl. 307—426 **18 Claims**



1. In a method for generation of coherent infrared radiation the steps of:

irradiating a medium of Raman active gaseous atoms or molecules with coherent radiation of a pump frequency ω_p to excite the resonant Raman mode at the frequency ω_R within the irradiated medium where the pump frequency ω_p minus the Stokes frequency ω_s is equal to the Raman mode frequency ω_R;

irradiating the resonant Raman active medium with radiation of an input frequency ω_i to generate output radiation of an output frequency ω_o related to the Raman mode frequency ω_R and to the input wave energy frequency ω_i by the relation $\omega_o = \omega_i \pm \omega_R$; and

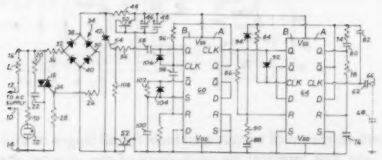
wherein the ratio of the phase velocity mismatch Δk of the medium to the electric field exponential gain coefficient Γ within the medium is in the range of 0.1 to 5, where $\Delta k = -(k_p - k_s) + (k_l - k_o)$ where k is the respective wave vector which is the equal to $(2\pi n/\lambda)$ where λ is the respective wavelength and n is index of refraction of the medium and where $\Gamma = \omega_s / 2 n_s c \cdot X''_R |E_p|^2$, where n_s is the index of refraction of the medium, X''_R is the on-resonance Raman susceptibility of the medium, c is the velocity of light, and E_p is the intensity of the pump electric field within the medium.

4,213,061

ELECTRONICALLY ACTUATED ELECTRIC SWITCH

Charles C. Conner, 4207 SE. 11th Ave., Portland, Oreg. 97202

Filed Jan. 30, 1978, Ser. No. 873,256
Int. Cl.² H01H *35/00*
U.S. Cl. 307—116 **10 Claims**



1. A switch for controlling an electric load in an alternating current supply circuit, comprising:

(a) electrically actuated load-control bi-directional switch means arranged to be connected across an alternating current supply circuit in series with a load to be controlled,

(b) electrical actuator means for the load-control switch,

(c) full wave rectifier means having an alternating current input and a direct current output,

(d) the electric load-control switch actuator means and the input of the rectifier means being connected together electrically in series and said series being connected across the load-control switch means,

(e) electrically actuated shunting switch means connected across the output of the rectifier means for releasably shunting said output and operable when actuated to shunt the direct current output of the rectifier means and apply alternating current from the supply circuit to the electrical actuator means for the load-control switch means, whereby to activate the latter and connect the electric load across the alternating current supply,

(f) electrical actuator means for the shunting switch means,

(g) electric drive signal generating means connected to the shunting switch actuator means and operable when activated by an electric control signal of predetermined polarity to provide an electric drive signal to said shunting switch actuator means to actuate the shunting switch means,

(h) electric control signal generating means having an output connected to the electric drive signal generating means and operable upon successive applications of an electric trigger signal to produce alternate positive-going and negative-going electric control signals,

(i) electric trigger signal generating means connected to the electric control signal generating means and including an impedance member,

(j) a source of electric potential connected to the trigger signal generating means, and

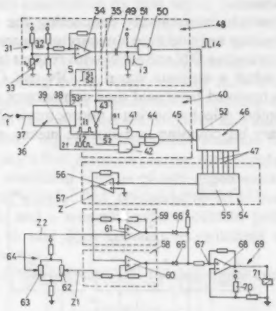
(k) an electrically conductive proximity member connected to the impedance member and arranged for contact or close proximity by a source of electric potential different from the potential applied to the trigger signal generating means, whereby to produce an electric trigger signal.

4,213,062

METHOD AND APPARATUS FOR PRESCRIBING A TIME OF DAY

Aksel Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Apr. 11, 1978, Ser. No. 895,444
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716517
Int. Cl.² H01H *43/00, 35/00*
U.S. Cl. 307—117 **4 Claims**



1. Apparatus for indicating a prescribed time of day, comprising, photosensitive means for detecting a daylight period beginning with sunrise and ending with sunset, said photosensitive means having a daylight output signal indicating the existence of said daylight period and a night-time output signal indicating the night-time period, signal generating means responsive to said daylight and night-time signals for generating a first signal of a predetermining magnitude for said daylight period and a second signal of twice said magnitude for said night-time period, integrating means for sequentially integrating said first and second signals and outputting a corresponding summation signal, comparator means connected to the output of said integrating means and being adjustable to a value to be compared which exceeds the expected summation value of said first signal and corresponds to a selected prescribed time of day, and resetting means responsive to the initiation of said daylight signal for resetting said integrating means at sunrise.

4,213,063

ROOM OCCUPANCY POWER PROGRAMMER

John L. Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105

Filed Apr. 27, 1978, Ser. No. 900,734
Int. Cl.² H01H *43/02*
U.S. Cl. 307—141 **5 Claims**

2. In a room occupancy electrical power programmer adapted to controlling the power output of a room wiring power circuit with a calendar real-time schedule, the combination comprising:

an electrical power pulse microcircuit source means;

a real-time microcircuit clock means adapted to provide calendar real-time signals from said power pulse source;

a real-time storage microcircuit first register means;

an ON-time storage microcircuit second register means;

an OFF-time storage microcircuit third register means;

a rapid-time pulse generator microcircuit means;

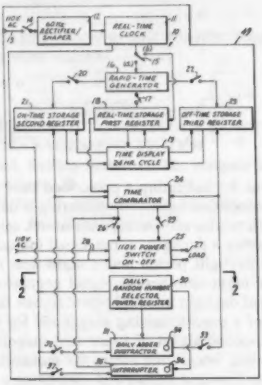
a digital time display means;

switching and microcircuit connecting means adapted to interconnect said real-time clock means, with said real-time first register means, with said ON-time register means, with said OFF-time register means, with said rapid-time generator means, and with said time display means, as each are required;

a time comparator means separately adapted to interconnect said real-time first register means with said ON-time second register means, and separately with said OFF-time third register means, said comparator means providing an equivalence signal when said ON-time second register means and said real-time first register means have the same time value, said comparator means providing a separate equivalence signal when said OFF-time third register means and said real-time first register means have the same value, and said comparator means providing a separate operational signal on a separate signal of ON and OFF equivalence;

a power switch conductively connecting the room utility power wiring and said time comparator means, said power switch operating ON and OFF with respect to said power wiring when a separate signal of ON and OFF equivalence is received from said time comparator means;

a daily number selector having a microcircuit chip comprising binary bit counting and storage means, said selector



adapted to provide a small number on input signal from the connected said real-time clock indicating the passage of 24 hours real-time, and said selector operatively connected to a daily adder/subtracter, said selector being disposable in aforesaid outlet box;

a daily adder/subtracter having a microcircuit chip comprising binary bit counting and storage means, said adder/subtracter adapted to adding and subtracting a selected number input signal from said random number selector on operatively connecting said adder/subtracter to said ON-time storage second register, and on operatively connecting said adder/subtracter to said OFF-time storage third register, said adder/subtracter alternatively operating in the add and subtraction mode as directed by a (+) and (−) operation key, said adder/subtracter being disposable in aforesaid outlet box; and,

all aforesaid combination adapted to and sized to be secured inside a conventional standard size room wall electrical outlet box and conductively connected to the electrical room wiring disposed in said outlet box.

4,213,064

REDUNDANT OPERATION OF COUNTER MODULES

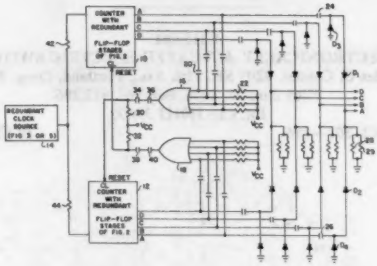
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Satoshi Nagano, Long Beach, Calif.

Filed Apr. 4, 1978, Ser. No. 893,903
Int. Cl.[2] G06F *11/08*
U.S. Cl. 307—219 **18 Claims**

1. In a system having a plurality of multistage counters for operation in parallel to provide a counter output code representative of a plurality of states, including a state representing a count of zero, for continued operation of said system in the event of failure of any one counter, the combination comprising

separate detecting means connected to each counter for detecting the zero state thereof, thus providing a number of detecting means equal to the number of counters, one detecting means for each counter,

separate AC coupling means connected to each of said detecting means for setting to the zero state all others of said counters upon detecting said zero state in any one counter,



two single set of output terminals for all stages of said counters, one terminal for each stage of one counter shared by corresponding stages of all other counters, and

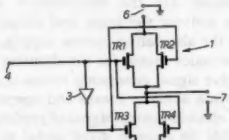
unidirectional AC coupling means coupling each terminal of said set of output terminals to corresponding stages of said counters, whereby continued operation of any one counter will continue to provide a counter output code at said set of output terminals.

4,213,065

DEVICE FOR PROVIDING A SELECTIVELY VARIABLE PROPORTION OF AN ELECTRICAL SIGNAL

Richard Morcom, London, England, assignor to Hughes Microelectronics Limited, Fife, Scotland

Filed Mar. 13, 1978, Ser. No. 886,200
Claims priority, application United Kingdom, Mar. 15, 1977, 10962/77
Int. Cl.[2] H03K *17/68*
U.S. Cl. 307—251 **12 Claims**



1. A device for providing a selectively variable proportion of an electrical signal comprising:

(a) first and second inputs for receiving said signal;

(b) first and second switching means each for being switched between relatively high and low conductivity states for alternating as well as direct current voltages and being connected in series between said inputs;

(c) an output connected to the series connection of said switching means; and

(d) control means for controlling the conductivity states of said switching means and including means arranged to operate said switching means cyclically between said high

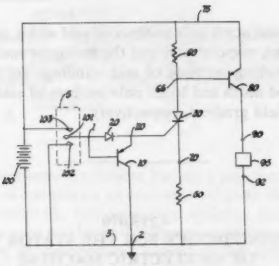
and low states such that when one of said switching means is in its high conductivity state the other of the switching means is in its low conductivity state, and means for controlling selectively the relative durations that said switching means remain in said high and low conductivity state.

4,213,066

SOLID STATE SWITCH

Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 11, 1978, Ser. No. 932,716
Int. Cl.[2] H03K 17/72
U.S. Cl. 307—252 C **3 Claims**



1. A control circuit for biasing a gate controlled switch on and off comprising means defining a reference voltage level, first and second input terminals, means connecting said second input terminal to said reference voltage level, means for selectively applying to said first input terminal a voltage level substantially equal to said reference voltage level or a higher voltage level, a gate controlled switch having an anode, a cathode, and a gate, a resistor connected between the cathode of said gate controlled switch and said reference voltage level, a diode having an anode connected to said first input terminal and a cathode connected to the gate of said gate controlled switch whereby said diode is operative to conduct turn-on bias current to said gate when said higher voltage level is applied to said first input terminal, a transistor having a base, an emitter, and a collector, means connecting the collector of said transistor to said reference voltage level, means connecting the base of said transistor to said first input terminal and to the anode of said diode, and means connecting the emitter of said transistor to the cathode of said diode and to the gate of said gate controlled switch whereby once the gate controlled switch is biased on and said reference voltage level is applied to said frist input terminal, said transistor is biased conductive in its emitter-collector circuit, reversing the bias on the gate-cathode circuit of said gate controlled switch to bias said gate controlled switch off.

4,213,067

INTEGRATED GATE TURN-OFF DEVICE WITH NON-REGENERATIVE POWER PORTION AND LATERAL REGENERATIVE PORTION HAVING SPLIT EMISSION PATH

Gordon B. Spellman, Mequon; Herman P. Schutten, Elm Grove, and Stanley V. Jaskolski, Sussex, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1978, Ser. No. 972,444
Int. Cl.[2] H03K 17/60; H01L 29/74
U.S. Cl. 307—252 C **5 Claims**

1. A monolithically integrated gate turn-off device comprising:

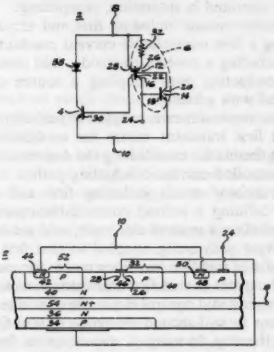
a pair of main terminals for carrying load current;

a control terminal which enables said device to be turned ON by signal current of one polarity, and be turned OFF by signal current of the opposite polarity;

non-regenerative switching means formed by a plurality of regions in a substrate, and connected between said main terminals for carrying load current when biased into conduction by base drive current, and being non-conductive in the absence of said base drive current whereby said device is OFF;

regenerative switching means formed by a plurality of serially laterally contiguous regions in said substrate one of which is a gate region connected to said control terminal, said regenerative switching means being connected in parallel with said non-regenerative switching means between said main terminals for carrying current when gated into conduction by said signal current of said one polarity applied to said control terminal, and remaining conductive upon removal of said signal current because of regenerative loop current flowing through said regenerative switching means between said main terminals, another region of said regenerative switching means being an emitter region connected to one of said main terminals, said emitter region having a split emission current path comprising a first emission current path supplying current for the remaining regions of said regenerative switching means to supply said regenerative loop current therethrough, and a second emission current path supplying current to said non-regenerative switching as said base drive current;

said device being turned ON by said signal current of said



one polarity applied to said control terminal rendering said regenerative switching means conductive, including current emission from said emitter region in both said emission paths, said second emission path supplying said base drive current to said non-regenerative switching means rendering the latter conductive to thus carry load current between said main terminals; and

resistance means in said first emission current path causing higher emission in said second emission current path, such that said device in said ON state carries high capacity load current through said non-regenerative switching means between said main terminals, and carries a small low level holding current through said regenerative switching means between said main terminals of sufficient magnitude to maintain said regenerative loop;

said device being easily turned OFF by a small signal current of opposite polarity applied to said control terminal, which readily renders said regenerative switching means non-conductive because of the low level of said holding current, whereby emission from said emitter region is stopped, thus terminating said base drive current supplied through said second emission current path and rendering said non-regenerative switching means non-conductive, hence terminating load current between said main terminals;

whereby there is afforded the combination of a lateral low

level regenerative loop, afforded by said regenerative switching means, having a split emission current path, the second of which controls a higher current capacity, afforded by said non-regenerative switching means, in order to achieve high turn-off gain by breaking the regenerative loop with a small signal.

4,213,068

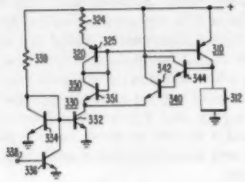
TRANSISTOR SATURATION CONTROL

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,610

Int. Cl.[2] H03K *3/26, 17/60, 23/22*

U.S. Cl. 307—255 **6 Claims**



1. A circuit arrangement for improving the characteristics of a transistor operated in saturation, comprising:

first transistor means including first and second electrodes defining a first controllable current conducting path and also including a control electrode, said controllable current conducting path coupling a source of energizing potential with a load;

conduction control means coupled to said control electrode of said first transistor means for establishing a control current therein for establishing the desired conductivity of said controlled current conducting path;

second transistor means including first and second electrodes defining a second controllable current path and also including a control electrode, said second controllable current path being coupled to said first and control electrodes of said first transistor means for controlling said control current in said first transistor means;

means coupling said control electrode of said second transistor means to said second electrode of said first transistor means thereby forming a degenerative feedback loop which reduces the effect of said conduction control means when said first transistor means is saturated; wherein:

said first, second and control electrodes of said first and second transistor means comprise emitter, collector and base electrodes, respectively;

said emitter electrode of said first transistor means is coupled to a first terminal of said source of energizing potential and said collector electrode is coupled to said load, said first transistor means being of PNP conductivity type; and

said second transistor means comprises first and second compound-connected transistors of NPN conductivity type having effective emitter, collector and base electrodes corresponding to said first, second and control electrodes, respectively of said second transistor means.

4,213,069

ELECTRIC MOTOR

Leroy W. Pryor, Box 596, Ladd, Ill. 61329

Filed Apr. 10, 1978, Ser. No. 894,922

Int. Cl.[2] H02K *7/00*

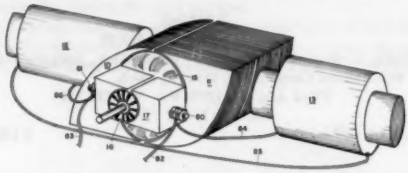
U.S. Cl. 310—46 **7 Claims**

1. An electric motor comprising:

a stator including north and south pole stator sections setting up a stator magnetic field gradient that tapers from strong to weak;

a rotor including a plurality of windings having south and north pole seeking sections tapering from strong to weak, said windings setting up a rotor magnetic field gradient tapering from strong to weak;

means for maintaining said rotor magnetic field gradient oriented such that the weakest north and south pole seeking sections of said windings are adjacent the strongest



south and north pole sections of said stator magnetic field gradient, respectively, and the strongest south and north pole seeking sections of said windings are adjacent the weakest north and south pole sections of said stator magnetic field gradient, respectively.

4,213,070

CONNECTING DEVICE FOR THE STATOR WINDING OF AN ELECTRIC MACHINE

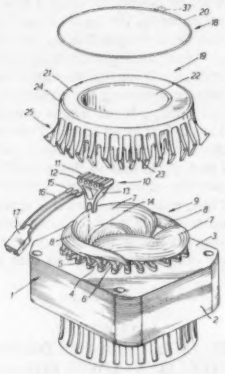
Egon Lund; Per G. Sorensen, both of Sonderborg; Poul Petersen; Sverre M. Borgen, both of Nordborg, and Jorgen C. Stannow, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 10, 1978, Ser. No. 932,433

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736831

Int. Cl.[2] H02K *11/00*

U.S. Cl. 310—71 **4 Claims**



1. An electric machine having a stator lamination packet with a central opening and grooves arranged circumferentially relative to said opening, said packet having a flat end face, a winding head adjacent said end face having skeins extending into said grooves, a cover for said winding head, a connecting device having a head portion with parallel grooves for receiving winding ends of said winding head and external connecting leads, said connecting device having a foot portion which extends between winding parts of said winding head, said head portion being larger than said foot portion thereof with concave surfaces being between said head and foot portions to allow nesting of said connecting device in said winding head, said connecting device being held down by said cover.

4,213,071
OXYGEN FILLED, SEALED HOUSING FOR PIEZOCERAMIC ELECTROACOUSTIC TRANSDUCER

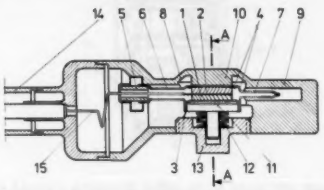
Jan Podgorski, Bergisch Gladbach, Fed. Rep. of Germany, assignor to INTERATOM Internationale Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,756

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646389

Int. Cl.² H01L *41/10*

U.S. Cl. 310—344 **6 Claims**



1. Electroacoustic transducer having a piezoceramic transducer element comprising an enclosure wherein the tranducer element is received, said enclosure defining spaces therein filled with oxygen and being oxygen-impermeable and oxygen-nonabsorbing at temperatures exceeding the temperature at which the transducer element decomposes when the ambient partial pressure of oxygen is lower than the partial pressure of oxygen in the transducer element itself.

4,213,072
GAS DISCHARGE DISPLAY DEVICE INCLUDING WEB SHAPED SPACING ELEMENTS

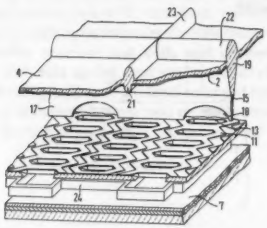
Werner Veith, Heidelberg, and Christian Stein, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 1, 1978, Ser. No. 956,640

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750587

Int. Cl.² H01J *61/067, 61/30, 61/42*

U.S. Cl. 313—217 **18 Claims**



1. Gas discharge display device comprising a gas filled gas-tight enclosure having a front plate, a rear plate and a plate-shaped control structure sub-dividing the interior of said enclosure into a gas discharge chamber and a post acceleration chamber, said plate-shaped control structure having mutually parallel elongated conductors on each side forming a matrix with row electrodes and column electrodes, said row electrodes facing the gas discharge chamber and said column electrodes facing the post accelerating chamber, said control structure being perforated in the intersection points of said matrix, said gas discharge chamber including at least one plasma electrode running parallel to said control structure, said post accelerating chamber including one post acceleration anode and spacing elements separating said post acceleration anode from said column electrodes by a minimal distance, said distance being such that a voltage of several kV will still fail to trigger a gas discharge, said spacing elements comprising struts with a wall thickness which is substantially constant, said struts extending in the plane of said control structure and being conveyed past said perforations of said control structure and running alternatively in sections, essentially parallel to said column and at an angle relative to the column conductor extension, respectively, said struts being electrically conductive, at least at their surface, such that a strut charging—which may possibly be produced by an electron beam entering said post acceleration chamber—will have faded away again until the next possible return of said electron beam.

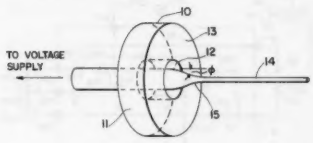
4,213,073
ROD PINCH DIODE

Redge A. Mahaffey, Wheaton; Shyke A. Goldstein, Rockville; Jeffry Golden, Laurel, and Gerald Cooperstein, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1978, Ser. No. 944,238

Int. Cl.² H01J *1/14, 1/20, 11/14*

U.S. Cl. 313—310 **8 Claims**



1. In an electron pinch diode receiving an electrical pulse from a high-voltage pulse generator, the improvement comprising:

a cathode, having a bore which extends through the cathode, said cathode being formed from a material which rapidly emits electrons during the early stage of said electrical pulse; and

an anode, fabricated from an electrically conductive material and formed in the shape of a rod having a section of wide diameter, a section of narrow diameter, and a medial taper therebetween, said anode extending through said bore of the cathode and being spaced from the cathode, and electrically connected to the pulse generator for pinching said electrons emitted from the cathode and propagating the electrons along the length of said anode.

4,213,074
THIN-FILM ELECTROLUMINESCENT DISPLAY PANEL SEALED BY GLASS SUBSTRATES AND THE FABRICATION METHOD THEREOF

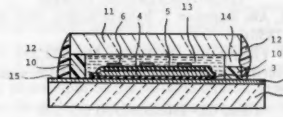
Masashi Kawaguchi; Hiroshi Kishishita, both of Nara; Etsuo Mizukami, and Yoshiharu Kanatani, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 14, 1978, Ser. No. 915,447

Claims priority, application Japan, Mar. 16, 1978, 53-30819

Int. Cl.² H05B *33/04, 33/10*

U.S. Cl. 313—509 **20 Claims**



1. A thin-film electroluminescent element comprising:

a pair of substrates disposed to define a cavity therebetween;

a composite comprising a thin-film electroluminescent layer sandwiched between a pair of dielectric layers, said composite being disposed within said cavity, at least one of said pair of substrates being transparent to the light emit-

ted by said electroluminescent layer when properly engaged;

a pair of opposing electrodes positioned to define said composite therebetween; and

a protective liquid disposed within said cavity defined by said substrates and being in contact with the dielectric layers, said protective liquid being adapted to impregnate into pin holes caused in the dielectric layers, said protective liquid being inert with respect to the thin-film electroluminescent layer and the two dielectric layers, resistant to high voltage, high humidity, and high temperature, and having a small vapor pressure and a small coefficient of thermal expansion.

4,213,075

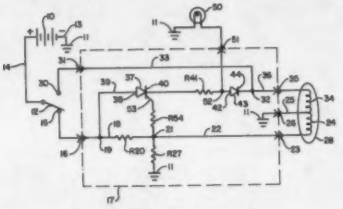
SAFETY CIRCUIT FOR ELECTRICAL LOADS

William A. Ericson, Rte. 8, Sturgeon, Wis. 54235

Filed Jul. 24, 1978, Ser. No. 927,643

Int. Cl.[2] H05B *39/10*; B60Q *1/04*

U.S. Cl. 315—83 **3 Claims**



1. A self-activating headlight safety control circuit for energizing a second headlamp filament when a first headlamp filament fails, comprising:

(a) a source of direct current, having a positive side and a ground side;

(b) a grounded first headlamp filament connected from the positive side of the source of direct current serially through a switch, a first junction, a first resistor, and a second junction;

(c) a grounded second headlamp filament connected from the positive side of the source of direct current serially through the switching means to a third junction;

(d) a silicon controlled rectifier having a cathode, an anode and a gate connection, with the anode connected to the first junction, the cathode connected serially through a second resistor and a diode to the third junction, the gate connected through a third resistor to the second junction, and with the silicon controlled rectifier unbiased to present an open circuit when the first headlamp filament is activated and biased to present a closed circuit to the second headlamp filament when the first headlamp filament fails; and

(e) a fourth resistor connected between the second junction and the source of direct current ground.

4,213,076

CONSTANT-CURRENT TRANSFORMER FOR GAS-DISCHARGE TUBES

Alfred Walz, Am Kurzarm 7, Emmendingen, Fed. Rep. of Germany (D-7830)

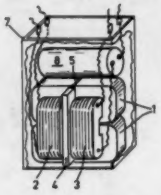
Filed Jul. 5, 1978, Ser. No. 922,238

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812757

Int. Cl.[2] H05B *41/16, 41/233*

U.S. Cl. 315—282 **13 Claims**

1. In a constant-current transformer for gas-discharge tubes with a series-resonance capacitor in a secondary load circuit and provided with an iron core made of grain-oriented magnetic sheet material, with electrically isolated primary and secondary windings, the improvement wherein at least one nonmagnetic gap with a total length δ and a mean iron path length l_m is provided in a main magnetic circuit, with at least two stray-field yokes adjacent said gap, $\delta/l_m > 0.002$, a maximum magnetic induction B_{max} of at least 17,000 gauss is achieved with rated line voltage on said primary winding, and including means for completely electrically isolating active iron and copper winding parts, a heat-conductive can surrounding said windings and said core which serves primarily to carry away heat losses, said parts being installed in said can



tightly pressing against the latter, wherein the surface of said can is at least 40% greater than the surface of the active transformer parts, and wherein impregnation of the completely assembled transformer, consisting at least of said primary and secondary windings, said core and said stray-field yokes, with said gap being determined by a nonmagnetic spacer in the main magnetic and stray-field circuits, is carried out following installation in said can using an epoxy resin in an overpressure centrifuging process.

4,213,077

SPEED CONTROL CIRCUIT FOR A UNIVERSAL ELECTRIC MOTOR

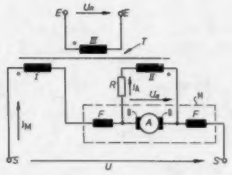
Friedrich Hornung, Stuttgart, and Martin Gerschner, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 24, 1978, Ser. No. 936,324

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741525

Int. Cl.[2] H02K *23/00*

U.S. Cl. 318—245 **18 Claims**



1. A speed control circuit for a universal electric motor of the kind having a transformer of which a primary winding is connected in series with the motor and of which a secondary winding is connected with the input of a regulation circuit, further comprising the improvement which consists in that:

said transformer has a second primary winding wound so as to oppose the first-mentioned primary winding and connected in series with a resistance, the series combination thereby formed being connected so as to be affected by the voltage across at least one winding of said motor, and

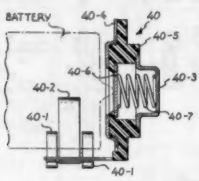
said first and secondary primary windings are so constituted that for a given value of said resistance (R), they balance each other out, with respect to their effect on said secondary winding, at a predetermined operating condition of said motor.

4,213,078

BATTERY HOLDER AND CONNECTOR FOR A RADIO RECEIVER OR THE LIKE

Sherwood W. Ferrell, Rustburg; Friedrich H. Mann, and Henry A. Schaefer, both of Lynchburg, all of Va., assignors to General Electric Company, Lynchburg, Va.

Division of Ser. No. 708,866, Jul. 26, 1976, Pat. No. 4,083,011.
This application Nov. 11, 1977, Ser. No. 850,553
Int. Cl.[2] H04B *1/034;* H01M *10/46*
U.S. Cl. 320—2 2 Claims



1. In a battery powered radio receiver or the like that requires a battery to be charged while said battery is positioned in said radio receiver or the like, an improved battery contact arrangement for said radio receiver or the like comprising:

a. a metallic member having an opening therethrough;

b. an insulating member positioned adjacent said metallic member, said insulating member having a first opening therethrough substantially in alignment with said opening in said metallic member, and said insulating member further having an enlarged opening adjacent to said first opening and located on the side of said first opening away from said metallic member;

c. a metallic contact positioned in said enlarged opening in said insulating member in the vicinity of said first opening in said insulating member, said metallic contact being larger than said first opening in said insulating member for retention in said enlarged opening in said insulating member;

d. a metallic spring positioned in said enlarged opening in said insulating member against said metallic contact;

e. and a metallic charging projection having a contact portion for engaging an external battery charging terminal and having a base portion, said metallic charging projection being positioned with said base portion in contact with said insulating member on the side thereof away from said metallic member and with said contact portion in contact with said spring, and said metallic charging projection holding said spring in said enlarged opening in said insulating member between said metallic contact and said contact portion of said charging projection.

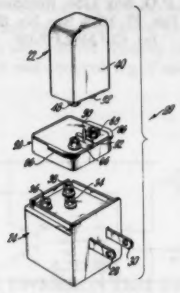
4,213,079

BATTERY CHARGER ADAPTER

Ferdinand H. Mullersman, Gainesville, Fla., assignor to General Electric Company, Worthington, Ohio

Filed Feb. 13, 1978, Ser. No. 877,299
Int. Cl.[2] H01M *10/46;* H02J *7/00*
U.S. Cl. 320—2 19 Claims

1. A charging adapter comprising a housing including a top portion and a bottom portion, said top and bottom portions having juxtaposed surfaces defining a cavity therebetween; said bottom portion having a first portion and a recessed portion, a pair of snap-type terminal contacts in said recessed portion; a pair of contact terminals extending from said top



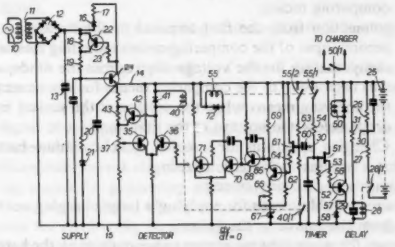
portion; circuit means in said cavity for electrically coupling one contact of one pair to one contact of the other pair.

4,213,080

AUTOMATIC ELECTRIC BATTERY CHARGING APPARATUS

Alan Rock, Wombourne, England, assignor to Chloride Group Limited, London, England

Filed Mar. 31, 1978, Ser. No. 892,270
Claims priority, application United Kingdom, Apr. 7, 1977, 14863/77
Int. Cl.[2] H02J *7/04*
U.S. Cl. 320—21 6 Claims



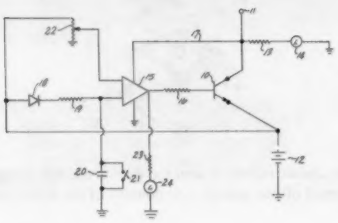
1. Automatic electric battery charging apparatus including terminating means responsive to the rate of change of a control signal, dependent on the battery voltage while on charge for initiating the termination of a phase of the charge when the rate of change of the said signal falls below a predetermined value, the terminating means including a capacitor and a bistable circuit having set and reset conditions, means for supplying the control signal dependent on battery voltage on charge through the capacitor to an input of the bistable circuit, so as to set the circuit when the battery voltage increases, capacitor charge adjusting means operative when the bistable circuit is set, for supplying current to the capacitor to adjust the charge of the latter until it re-sets the bistable circuit, and a timer arranged to be reset by the bistable circuit in its set state, and means to terminate the charge or reduce the average charging current if the timer is not reset within a predetermined time.

4,213,081

METHOD AND APPARATUS FOR CHARGING SEALED NI-CAD BATTERIES

Earnest R. Taylor, P.O. Box 1254, Rosamond, Calif. 93560

Filed Feb. 27, 1978, Ser. No. 881,179
Int. Cl.[2] H02J 7/04
U.S. Cl. 320—40 9 Claims



1. An electrical energy storage system comprising:
a sealed nickel-cadmium battery having first and second terminals;
a source of charging current;
disconnectable means for applying a large charging current from the source to the battery;
a diode and a capacitor connected in series between the first and second terminals of the battery, the diode being connected to the first terminal and the capacitor being connected to the second terminal to form therebetween a junction, the diode being poled to charge the capacitor as the battery voltage increases;
comparing means having first and second inputs;
means for connecting the junction to the first input of the comparing means;
a connection from the first terminal of the battery to the second input of the comparing means including means for compensating for the voltage drop across the diode; and
means responsive to the comparing means for disconnecting the applying means when the voltage at the second input drops below the voltage at the first input.

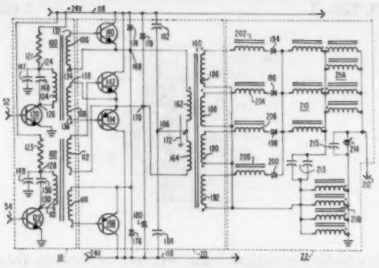
6. Charging apparatus for a sealed nickel-cadmium battery having a terminal voltage comprising:
a source of charging current;
disconnectable means for applying a large charging current from the source to the battery;
means for storing the maximum value attained by the battery terminal voltage on an ongoing basis, the storing means comprising a pulsed oscillator, means for counting the oscillations of the oscillator, means for converting the counted oscillations to an analog signal, and means for actuating the oscillator as long as the analog signal is less than the battery terminal voltge to cause the counted oscillations to follow the maximum value of the terminal voltage of the battery;
means for comparing the stored maximum value with the instantaneous value of the terminal voltage, the comparing means comprising a comparator having a first input to which the analog signal is applied and a second input to which the battery terminal voltage is applied; and
means responsive to the comparing means for disconnecting the applying means when the instantaneous value of the terminal voltage is less than the stored maximum value of the terminal voltage.

4,213,082

VOLTAGE REGULATOR

Daniel A. Wisner, Milan, and Truman T. Schmalzriedt, Farmington Hills, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 27, 1978, Ser. No. 955,253
Int. Cl.[2] G05F 1/56
U.S. Cl. 323—17 12 Claims



1. A voltage regulator for receiving an unregulated input voltage from an electrical energy source and supplying a regulated D.C. voltage at its output, said voltage regulator comprising:
a first transformer means including a magnetic core having first and second electrical windings disposed in inductive relation therewith;
driver switch means, operably connected to said first electrical winding and having on and off states for, when on, supplying energizing current from said electrical energy source to said first transformer means;
regulating means, operably connected to said driver switch means and reponsive to the magnitude of said output voltage of said voltage regulator, for controlling the length of time said driver switch means is in the on state so as to control the amount of energizing current applied to said first transformer means;
second transformer means for providing an output voltage of a predetermined magnitude;
output switch means, having on and off states and operably connected to said second electrical winding of said first transformer means and to second transformer means, for, when switched to said on state by said first transformer means, supplying energizing current to said second transformer means; and
capacitance means, coupled in parallel with said first electrical winding of said first transformer means, for short-circuiting said first electrical winding when said driver switch means is switched to said off state so as to decrease the turnoff time of said output switch means.

4,213,083

CIRCUIT ARRANGEMENT FOR COMPENSATING TRANSMISSION ERRORS OF A TRANSFORMER

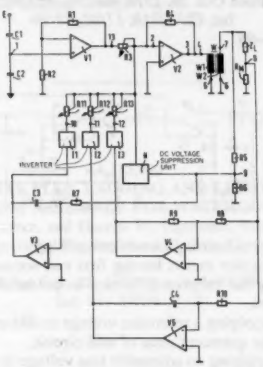
Hanz-Joachim Freygang, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 29, 1977, Ser. No. 828,422
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1976, 2641581
Int. Cl.[2] H01F 40/14
U.S. Cl. 323—44 R 8 Claims

1. A circuit arrangement for compensating for the transmission errors occurring in a desired signal as a result of passage of said desired signal through a transformer, said transformer having a primary winding and secondary winding, said secondary winding being adapted to be connected to a load impedance, said circuit arrangement comprising:
phase shift means adapted to be responsive to the output of

said secondary winding for generating a compensating signal having a phase and amplitude adjusted so as to result in the substantial cancellation of the transmission errors occurring in said desired signal when combined with said desired signal and passed therewith through said transformer;

combining means for combining said compensating signal and said desired signal for application to said primary winding of said transformer;



first means responsive to the output of said secondary winding applied to said load impedance for generating a signal which is in phase with the current flowing through said load impedance and whose amplitude is proportional to the amplitude of said current; and

second means for coupling the signal generated by said first means to said phase shift means.

4,213,084

VARIABLE LEAKAGE TRANSFORMER

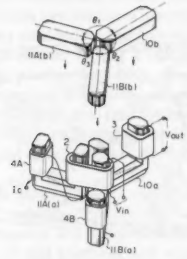
Hirayama Hiromitsu, Funabashi, Japan, assignor to TDK Electronics Company Limited, Tokyo, Japan

Filed Mar. 9, 1978, Ser. No. 884,953

Claims priority, application Japan, May 20, 1977, 52-57749; May 26, 1977, 52-66946[U]; Jun. 30, 1977, 52-85426[U]

Int. Cl.[2] H01F *29/10, 29/12*

U.S. Cl. 323—56 **1 Claim**



1. A variable leakage transformer, comprising:

first, second and third magnetic core pieces, each forming a closed magnetic path and having a common leg and another leg,

said common legs being in mutual juxtaposition, with each of said core pieces being rotatable about the common leg thereof,

a primary winding wound about said juxtaposed common legs of said core pieces,

a secondary winding wound about the other leg of said first core piece,

a control winding wound about at least one of the other legs of said second and third core pieces, and

means coupled to said control winding for controlling the magnetic flux in said common leg of said first core piece.

4,213,085

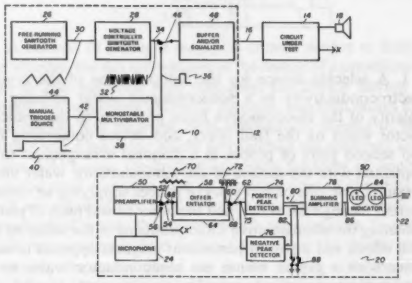
PHASE INVERSION TEST DEVICE

Daniel J. Ramer, 4 Hillside Rd., Kinnelon, N.J. 07405

Filed Aug. 28, 1978, Ser. No. 937,244

Int. Cl.[2] G01R *27/00, 19/16, 19/14*

U.S. Cl. 324—57 R **8 Claims**



1. A device for testing phase inversion of a circuit under test which comprises:

signal generator means for generating an assymetrical test signal;

means for electrically coupling said assymetrical test signal to said circuit under test;

means for receiving a plurality of output signals from said circuit under test;

first switching means for selectively testing a first output signal of said plurality of output signals from said circuit under test;

differentiator means electrically coupled to said first switching means for generating a plurality of voltages proportional to the slopes of said assymetrical test signal;

means for electrically by-passing said differentiator means;

polarity oriented peak detector means, electrically coupled to said means for electrically by-passing, for generating D.C. voltages and isolating said plurality of voltages porportional to the slopes of said assymetrical test signal when said differentiator means is utilized, said D.C. voltages are proportional to peak amplitudes of said assymetrical test signal when said differentiator means is by-passed, and for integrating frequency dependent variations within a sweep range of said assymetrical test signal;

summing amplifier means for summing the output of said peak detector means and amplifying the difference between said D.C. voltages generated therefrom; and

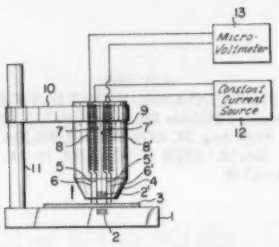
indicator means, electrically coupled to said amplifier means for registering a change in polarity in response to the output of said amplifier means, said indicator means calibrated to represent no phase inversion for a positive polarity indication from said indicator means and a phase inversion for a negative polarity indication from said indicator means.

4,213,086

SELECTOR DEVICE FOR THE DETERMINATION OF THE TYPE OF ELECTROCONDUCTIVITY IN SEMICONDUCTOR WAFERS

Yoshiya Iida, Annaka, and Shoichiro Ohga, Higashikurume, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,284
Claims priority, application Japan, Jul. 8, 1977, 52-81036
Int. Cl.[2] G01R *27/00, 31/26*
U.S. Cl. 324—62 1 Claim



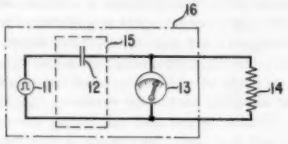
1. A selector device for the determination of the type of electroconductivity in a semiconductor wafer utilizing the polarity of the electromotive force produced in the semiconductor wafer by the Hall effect, said device comprising first and second pairs of probes in a diagonal arrangement to be contacted with the surface of the semiconductor wafer under measurement, one of said pairs of probes supplying an electric current through the wafer, and the other of said pairs of probes detecting the electromotive force produced in the wafer by the Hall effect, and a pair of permanent magnets opposed to each other with a gap in which the semiconductor wafer to be measured is placed when under measurement, one of said permanent magnets being positioned within the circumference determined by said probes, wherein said one of said permanent magnets positioned within the circumference determined by said probes has dimensions such as to be confined within the circle or ellipse inscribed to a square or rhombus having corners at the contact points between said probes and the surface of the semiconductor wafer under measurement.

4,213,087

METHOD AND DEVICE FOR TESTING ELECTRICAL CONDUCTOR ELEMENTS

Alan T. English, Summit, and Gabriel L. Miller, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 847,213, Oct. 31, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,578
Int. Cl.[2] G01R *27/02*
U.S. Cl. 324—62 17 Claims



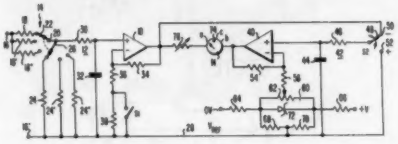
1. In the manufacture of integrated circuit devices, a method for testing at least one electrical conductor element by determining nonlinearity of electrical resistance of said element as a function of current flowing in said element characterized in that said method comprises the steps of (1) electrically connecting said element to the output terminals of an AC-coupled linear electrical network whose input terminals are connected to an electrical wave generator, (2) activating said wave generator, and (3) measuring the average voltage across said element.

4,213,088

VOLTAGE MEASURING CIRCUIT

Edward J. Nossen, Camden, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 952,969
Int. Cl.[2] G01R *17/02, 15/08*
U.S. Cl. 324—98 15 Claims



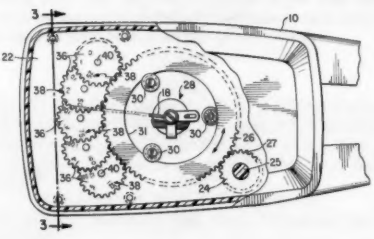
1. A voltage measuring circuit comprising:
voltage indicator means having first and second inputs for indicating the relative difference in potentials applied to said inputs,
means for applying a reference voltage to one of said inputs during the quiescent state of said circuit,
means for applying an adjustable bias voltage to the other of said inputs,
means for applying a first voltage proportional to the voltage being measured to said one input,
said means for applying said bias voltage including means for maintaining the voltage level at said other input at the level of said bias voltage for one polarity of said first voltage, and
means for adding to said bias voltage a second voltage at an amplitude level proportional to said first voltage and of the same polarity as said first voltage for the opposite polarity of said first voltage.

4,213,089

VARIABLE SCALE READOUT FOR MULTI-METER USE

Leonard N. Liebermann, La Jolla, Calif., assignor to TIF Instruments, Inc., Miami, Fla.

Filed Oct. 2, 1978, Ser. No. 947,642
Int. Cl.[2] G01R *15/08*
U.S. Cl. 324—115 5 Claims



1. Apparatus for adjusting a selected meter scale of pointer-type meters for uncluttered readout comprising:
(a) a housing;
(b) a meter plate supported by said housing having a plurality of display windows arranged in an arcuate configuration;
(c) a plurality of geared display wheels mounted in non-engageable relation with each other and imprinted with scale numerals arranged about each display wheel face

enabling the numerals to be brought into register with the windows on the meter plate to permit arcuate readout of the selected meter scale;

(d) a ring gear rotatably mounted for simultaneous engagement of the display gears;

(e) a drive gear rotatably mounted for engaging the ring gear whereby rotation of the drive gear rotates the ring gear causing rotation of the display gears whereby a desired meter scale is set and can be read through the windows on the meter plate; and

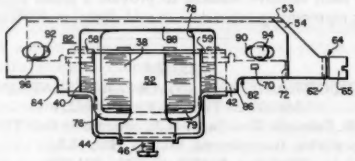
(f) means for rotating the drive gear.

4,213,090

INTEGRAL FLUX LAGGING AND LIGHT LOAD ADJUSTMENT ASSEMBLY FOR WATTHOUR METERS

Joseph M. Keever, and George W. Lipscomb, both of Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1978, Ser. No. 954,383
Int. Cl.[2] G01R *11/02*
U.S. Cl. 324—138 **8 Claims**



1. An induction watthour meter including an electromagnet assembly with voltage and current magnetic sections and a rotatable disc driven at a rate responsive to voltage and current magnetic fluxes directed from the magnetic sections into said disc, wherein said voltage magnetic section comprises:

a voltage magnetic core including a main pole terminating at a main pole face and two adjacent flux return poles terminating at coplanar auxiliary pole faces on opposite sides of said main pole face;

a one piece electroconductive bracket and lag loop member having a platform carrying two mounting tabs at one side thereof fixedly attached to said flux return poles, said one piece member further having a continuous current conducting loop portion including an inverted U-shaped extension projecting from said one side of said platform and around said main pole face for producing a predetermined phase lagging effect in a working voltage magnetic flux component directed from said main pole face and into said disc;

magnetic means extending over said auxiliary pole faces in substantially coplanar relationship with said inverted U-shaped extension and being slidably mounted on a bottom surface of said platform, said magnetic means being movable within a secondary voltage magnetic flux component extending between said disc and said coplanar auxiliary pole faces for varying the increasing and decreasing disc torque producing effects of the secondary voltage flux component; and

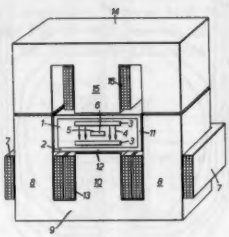
manual operator means mounted on the top surface of said platform and being connected to said magnetic means for varying a light load adjustment position of said magnetic means.

4,213,091

METHOD AND APPARATUS FOR TESTING A MAGNETIC DOMAIN DEVICE

Paul V. Cooper, Kingsley, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed May 16, 1978, Ser. No. 906,623
Claims priority, application United Kingdom, May 21, 1977, 21503/77
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—210 **7 Claims**



1. A method of testing a magnetic domain device to determine whether the device operates at the centre of a preselected range of bias magnetic field strengths, the device having a substrate for supporting magnetic domains, bias field means for providing the bias magnetic field substantially normal to the substrate and a magnetic shield surrounding the substrate and the bias field means, the method including the steps of: applying an external magnetic field to opposed sides of the shield, which are substantially parallel to the bias field, to provide a magnetic field within the shield, which superimposes linearly on said bias magnetic field without saturating the shield; and monitoring the operation of the device whilst adjusting the value of said external field to determine whether said bias field is set to said centre of the preselected range of bias magnetic field strengths.

4,213,092

NMR SPECTROMETER WITH SUPERCONDUCTING COIL HAVING RECTANGULAR CROSS-SECTION WIRE

George D. Kneip, Jr., Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 21, 1978, Ser. No. 879,291
Int. Cl.[2] G01R *33/08*
U.S. Cl. 324—319 **15 Claims**

1. An NMR spectrometer for testing a sample comprising

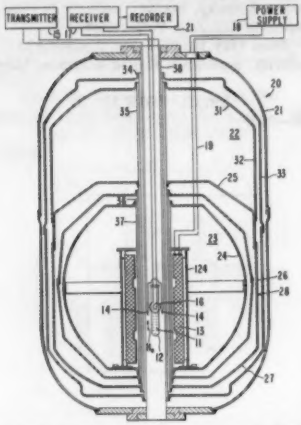
a transmitting coil for applying an rf field to the sample,

a receiver coil coupled to the sample for deriving a signal indicative of the NMR properties of the sample,

a solenoid coil having a longitudinal axis about which the coil is wound and a central core in which said transmitting and receiver coils and said sample are positioned, said coil applying a homogeneous DC magnetic field to the sample,

said coil being formed of superconducting wire having a rectangular cross-section, said wire being formed of a non-superconducting metal having a relatively low room temperature material surrounding superconductor material having a small enough cross sectional area that a magnetic field resulting from current flowing in the superconductor material has a relatively constant location relative to the cross section of the wire, said wire being wound as a plurality of helices each of which is concentric

with the coil longitudinal axis, immediately adjacent helices having oppositely directed pitches and faces that abut



substantially against each other, adjacent turns of the same helix having faces that abut against each other.

4,213,093

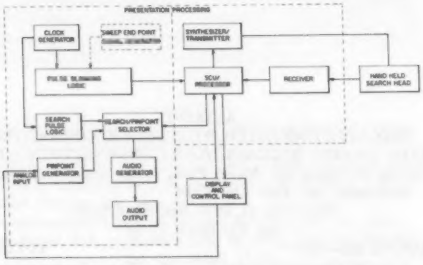
PORTABLE BURIED OBJECT DETECTION SYSTEM WITH ERROR REDUCING SIGNAL PROCESSING

Peter M. Pecori, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 774,574, Mar. 4, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,511

Int. Cl.[2] G01V *3/08*

U.S. Cl. 324—329 **4 Claims**



1. In a device for detecting objects buried within the earth's surface of the type that is swept back and forth in an arc over the ground to be searched, the improvement comprising:

a. means for generating a signal representing the endpoints of the sweep arc;

b. means for transmitting a signal into the ground and receiving a returning signal from the ground;

c. means connected to said means for transmitting and receiving for processing said returning signal and for developing a background level for use in creating a triggering detection threshold; and

d. means connected to said means for generating a signal and connected to said means for processing and developing, for preventing said returning signal from being utilized in creating said detection threshold in response to receiving an endpoint representing signal therefrom.

4,213,094

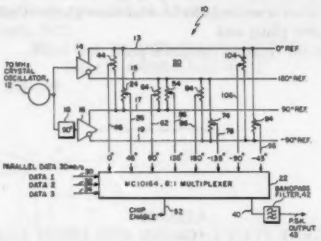
POLY-PHASE MODULATION SYSTEMS

Wilhelm A. H. Wood, Walpole, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 13, 1978, Ser. No. 924,115

Int. Cl.[2] H04L *27/20*

U.S. Cl. 370—12 **14 Claims**



1. A phase modulator used in the generation of a multiphase carrier comprising phase shift means for providing orthogonal pairs of carrier reference signals on pairs of output leads for use as pairs of reference vectors, independent resistive elements coupled to each pair of said output leads to provide at the output of a resistive element a separately adjusted phase vector, and an addressable digital multiplexer coupled to the output of each resistive element to provide a phase modulated carrier representing input data to said digital multiplexer.

4,213,095

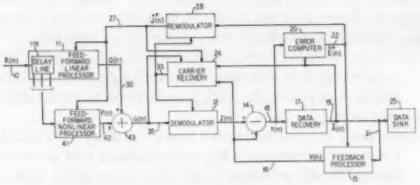
FEEDFORWARD NONLINEAR EQUALIZATION OF MODULATED DATA SIGNALS

David D. Falconer, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 4, 1978, Ser. No. 931,026

Int. Cl.[2] H03H *7/40*

U.S. Cl. 375—14 **25 Claims**



1. In an arrangement responsive to samples of a received modulated data signal for forming decisions as to the values of data symbols contained in said signal, each of said samples being represented by a complex number, that improvement which comprises

means (51–55, 61–65) for forming a plurality of signal products associated with an individual one of said samples, each multiplicand of each product being derived from a respective one of said samples, each said respective one of said samples bearing a predetermined temporal relationship to said individual one of said samples, and at least one multiplicand of individual ones of said signal products being the complex conjugate of the sample from which said one multiplicand is derived,

means (71–75) for multiplying each of said products by an associated coefficient to form a plurality of weighted products,

means (81–86) for combining said weighted products with each other to generate a feedforward nonlinear signal, and

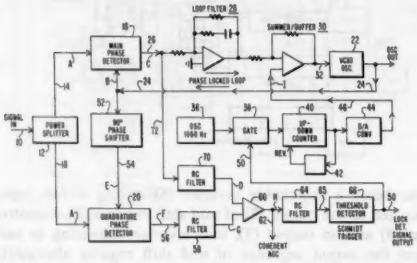
means (12, 14, 17, 43) for forming an individual one of said decisions in response to said feedforward nonlinear signal.

4,213,096

PHASELOCK RECEIVER WITH PHASELOCK DETECTOR

James W. Daniel, Jr., Camden, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 26, 1978, Ser. No. 900,129
Int. Cl.[2] H04B 1/16
U.S. Cl. 455—260 **5 Claims**



1. A phaselock receiver including a phaselock detector, comprising

a phase lock loop including a voltage-controlled oscillator, and a main phase detector receptive to an output of said oscillator and a received signal,

a 90° phase shifter receptive to an output of said oscillator,

a quadrature phase detector receptive to a quadraturephase-shifted oscillation from said phase shifter and said received signal, and

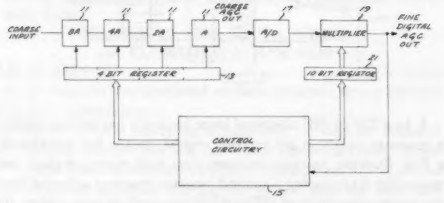
means to subtract the direct-current component of the output of said main phase detector from the direct-current component of the output of said quadrature phase detector to provide a phaselock-indicating signal which is substantially zero when the oscillator is out-of-lock with the received signal.

4,213,097

HYBRID AUTOMATIC GAIN CONTROL CIRCUIT

Ran F. Chiu; Philip F. Kromer, III; Ming L. Kao, all of Miami, and Henry H. Parrish, Miami Springs, all of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Filed Oct. 19, 1978, Ser. No. 952,650
Int. Cl.[2] H03G 3/20
U.S. Cl. 330—51 **11 Claims**



1. An automatic gain control circuit for controlling the gain provided to an input signal comprising:

analog means responsive to a first control signal for adjusting said gain to provide a partially gain-corrected signal;

means for converting said partially gain-corrected signal to a digital signal;

digital means responsive to a second control signal for adjusting the gain of said digital signal to produce a second gain-corrected signal; and

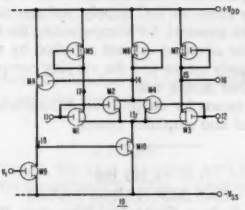
means responsive to said second gain-corrected signal for producing said first and second control signals.

4,213,098

SEMICONDUCTOR DIFFERENTIAL AMPLIFIER HAVING FEEDBACK BIAS CONTROL FOR STABILIZATION

Yannis Tsividis, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,737
Int. Cl.[2] H03F 3/45, 3/16
U.S. Cl. 330—253 **15 Claims**



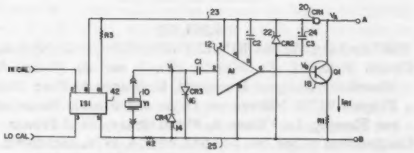
1. An MOS differential amplifier circuit including a pair of substantially identical branches, each branch having a separate signal input MOS transistor (M_1, M_3) in series with a separate MOS load transistor (M_5, M_7), both branches being connected to the drain of a common current-source MOS transistor (M_{10}), CHARACTERIZED IN THAT said circuit further includes an auxiliary branch including a pair of substantially identical auxiliary input signal MOS transistors (M_2, M_4), each of whose gate electrodes is connected to a gate electrode of a different one of the separate signal transistors (M_1, M_3), each of whose drains is connected to a common-mode feedback node (14), and each of whose sources is connected to the drain of said common current source transistor (M_{10}), the common-mode feedback node (14) being connected to an auxiliary load device (M_6) and to the gate electrode of a feedback MOS transistor (M_8), the source of which is connected to the gate electrode of the common current-source transistor (M_{10}).

4,213,099

HYDROPHONE PREAMPLIFIER AND CALIBRATION CIRCUIT

Craig K. Brown, Winter Garden, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1978, Ser. No. 962,406
Int. Cl.[2] H03F 17/00, 3/16
U.S. Cl. 330—297 **6 Claims**



1. A preamplifier for use with an AC signal source and having terminals for connection to a two-wire cable, one wire of which goes to a remote load and the other wire of which goes to a remote DC voltage supply source comprising, in combination:

amplifier means for producing an amplified voltage input

signal corresponding to the signals from said AC signal source, said amplifier means also having terminals for connection to said remote DC supply source terminal and said remote-load terminal;

current driver means, receiving the output of said amplifier means, for converting the AC output signal to a corresponding signal current having a DC level on which the AC signal components are superimposed, said current driver means having terminals for connection to said remote DC supply source terminal and said remote-load terminal;

constant-current supply means, inserted in series with the DC supply source by being connected between the DC supply source terminals of said amplifier means and said current driver means, for maintaining a constant DC current supply at its amplifier-means side;

current-compensation means, connected across said amplifier means from its DC supply voltage terminal to its remote-load terminal, for compensating for the difference between the constant current supplied by said constant-current supply means and the varying current demand of said amplifier means; and

optoisolator means for coupling an AC calibration signal to the input of said amplifier means.

4,213,100

GAS DISCHARGE LASER

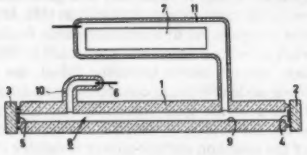
Robertus A. J. Keijser; Gustaaf A. Wesselink; Bram J. Derksema, and Johannes A. T. Verhoeven, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1978, Ser. No. 903,887

Claims priority, application Netherlands, May 23, 1977, 7705623

Int. Cl.[2] H01S *3/03*

U.S. Cl. 331—94.5 D **7 Claims**



1. A gas discharge laser comprising: a glass envelope containing a lasing gas medium for producing a discharge and with a part of the envelope forming a laser tube having an axis, first and second laser mirrors arranged so that the optical axis thereof coincides with the axis of the laser tube and forming therewith a resonant cavity, first and second electrodes positioned in spaced relationship in said glass envelope for exciting the lasing gas, and wherein at least an inner wall of the laser tube comprises a gehlenite glass.

4,213,101

PSEUDO-RANDOM BINARY SEQUENCE GENERATOR

Gerard Policand, La Marche EA, 1 rue de Nozay, 91310 Montlhery; Jacques Trompette, Residence du Parc, Bat. Les Thuyas, 91700 Villiers sur Orge, and Francis Bourrinet, 13 rue Fleming, Le Village A, 91400 Orsay, all of France

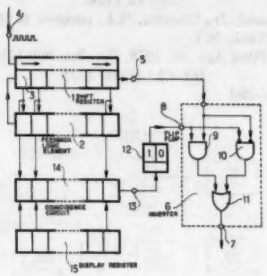
Continuation of Ser. No. 663,692, Mar. 4, 1976, abandoned. This application Jun. 15, 1977, Ser. No. 806,838

Claims priority, application France, Mar. 12, 1975, 75 07647

Int. Cl.[2] H03K *3/84*; G06F *7/38*; H03B *29/00*

U.S. Cl. 331—78 **3 Claims**

1. A pseudo-random binary sequence generator arrangement with inverter means; comprising a periodically operated shift register (1) having a counting cycle and feedback logic means receiving predetermined outputs of said shift register and feeding back binary information to said shift register, said shift register having an input responsive to the binary information from said feedback logic means, said feedback logic means being responsive to a logic signal combination of the logic states of at least two stages of said shift register, said inverter



means being a switchable inverter (6) having a data input connected to the output (5) of said shift register (1), a control input (8) and an output (7), said inverter delivering to said output the output sequence of said shift register alternately inverted and non-inverted, said inverter being switched over via said control input once per cycle of said register.

4,213,102

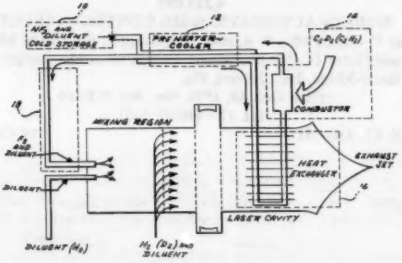
FLUORINE GENERATOR FOR CHEMICAL LASERS

Walter R. Warren, Jr., Rancho Palos Verdes; Donald A. Durran, Manhattan Beach, and Donald J. Spencer, Torrance, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1978, Ser. No. 888,813

Int. Cl.[2] H01S *3/22*

U.S. Cl. 331—94.5 G **3 Claims**



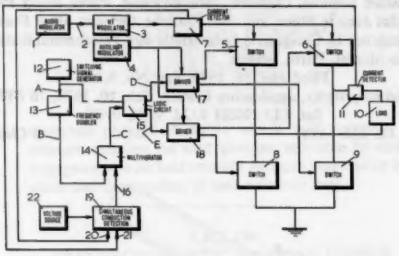
1. In a DF or HF chemical laser having a gas mixing region, a resonant cavity, a gas exhaust region, means for introducing a first fluorine gaseous reactant into said mxing region, and means for introducing a second gaseous reactant selected from the group consisting of HF and DF into said mixing region, the improvement which comprises means for the cold storage of an NF_3 gaseous component capable of generating said first fluorine gaseous reactant, means for preheating said stored gaseous component, means for effecting the dissociation of said preheated gaseous component to fluorine, means for cooling said dissociated gaseous fluorine, and means for presenting said cooled, dissociated, gaseous fluorine to said gas mixing region.

4,213,103

CIRCUIT FOR DETECTING AND CONTROLLING SIMULTANEOUS CONDUCTION OF TWO SWITCHES CONNECTED IN SERIES

David R. Birt, Oxted, England, assignor to Communications Patents Limited, London, England

Filed May 10, 1978, Ser. No. 904,413
Claims priority, application United Kingdom, Jun. 9, 1977, 24179/77; Jul. 12, 1977, 50844/77; Sep. 26, 1977, 39971/77
Int. Cl.[2] H03K 7/10; H02M 7/48
U.S. Cl. 332—9 T 14 Claims



1. A switching system comprising at least one pair of semiconductor switches connected in series across a D.C. supply and providing means for energizing a load, the load being connected to the junction between the pair of switches, a means for returning to the supply current passing through the load when one switch of the pair is conductive, a means for supplying current from the supply to the load when the other switch of the pair is conductive, means for providing a series of "off" command and a series of "on" command signals, the pair of switches being sequentially operable by the series of "on" and "off" command signals, means for providing a delay interval between the sequential application of one of the "off" command signals to one switch of the pair and the subsequent application of one of the "on" command signals to the other switch of the pair, and for preventing simultaneous conduction of each switch of said pair of switches, means for detecting simultaneous conduction of the two series connected switches, and means for increasing the duration of the delay interval when simultaneous conduction is detected.

4,213,104

VACUUM ENCAPSULATION FOR SURFACE ACOUSTIC WAVE (SAW) DEVICES

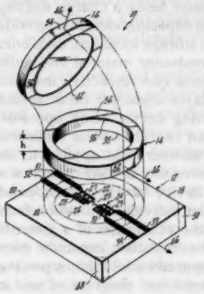
Donald E. Cullen, and Robert A. Wagner, both of Manchester, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 25, 1978, Ser. No. 945,359
Int. Cl.[2] H03H 9/10, 9/04, 9/30
U.S. Cl. 333—150 17 Claims

1. A vacuum encapsulated surface acoustic wave (SAW) structure, comprising:

a SAW device including a substrate of desired material having a major surface on which electro-acoustic transducers and associated electrical conductors are disposed along an acoustic wave propagation path on said substrate, said transducers and propagation path defining an active signal region on said major surface, said electrical conductors providing electrical connections for external signals presented to and received from the active signal region; and

a cover, formed of material having substantially the same thermal characteristics and the same crystallographic orientation as the material comprising said substrate, said cover being bonded through a vacuum tight seal to said



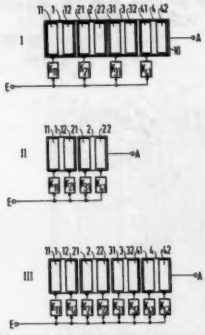
major surface of said substrate to enclose said active signal region in a vacuum environment.

4,213,105

TRANSVERSAL FILTER HAVING AT LEAST ONE ANALOG SHIFT REGISTER, AND A METHOD FOR ITS OPERATION

Karl Knauer, Gauting, and Hans J. Pfleiderer, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 856,004
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658524
Int. Cl.[2] H03H 7/28; H03K 5/13; G11C 19/18, 27/00
U.S. Cl. 333—165 2 Claims



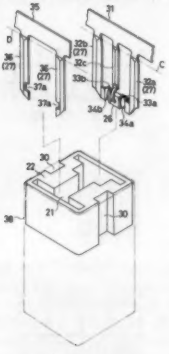
1. A transversal filter comprising at least one analog shift register having a series of successive storage locations, a number of parallel inputs and a series output, having an additional number of individual valuator circuits which can be preset to represent respective individual valuation factors, each valuator circuit having at least one signal input for the input of the signal to be filtered, and at least one output, each valuator circuit supplying at its output a quantity of charge which is a function of the preset individual valuation factor thereof and a differential amount equal to the respective signal value of the signal to be filtered minus a prescribed minimum value smaller than or equal to the value of the signal minimum, or a differential amount equal to a maximum value larger than or equal to the value of the signal maximum minus the respective signal value, the output of each valuator circuit being connected to an apertaining paralel input of the shift register, and the holding capacity of each storage location of the shift register being

at least such that said storage location can always accommodate the maximum quantity of charge supplied by a preceding storage location and can additionally always accommodate the maximum charge supplied by an assigned valuator circuit, the analog shift register being a charge shifting device having at least one series of capacitor elements providing respective ones of the successive storage locations, each comprising a substrate of doped semiconductor material and outer electrode means for forming at least one respective insulating layer capacitor and/or barrier layer capacitor on a surface of the substrate, said charge shifting device being operable in response to a number of at least two shift pulse sequences, phase-shifted in relation to one another, and applied to the outer electrode means of respective sets of said capacitor elements, and said charge shifting device having a number of valuator circuits preset to represent individual valuation factors which number is sufficient for the realization of a given filter function, and having one of the respective capacitor elements thereof connected to the output of each of the respective valuator circuits, the number of capacitor elements of said series being essentially equal to the number of said valuator circuits.

4,213,106
TUNING APPARATUS AND METHOD OF PRODUCING THE SAME

Toyoaki Tunematu, Shiga; Seiichi Takeno; Testuo Yamaguchi, both of Youkaichi, and Muneharu Egawa, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Apr. 3, 1978, Ser. No. 892,947
Claims priority, application Japan, Sep. 30, 1977, 52-132654[U]
Int. Cl.[2] H03H *7/10, 1/00;* **H01R** *13/16, 13/66*
U.S. Cl. 333—185 **16 Claims**



1. A tuning apparatus comprising a capacitor chip, a coil, a base member which has a hollow space for receiving said capacitor chip and on which said coil is mounted, and a plurality of external terminals projecting from said base member and electrically connected to said capacitor chip and coil,

said plurality of external terminals being prepared of comb-shaped formed parts in the form of electrically conductive metal members each having a plurality of comb teeth, wherein at least two comb teeth selected from said plurality of comb teeth are inserted at their front ends into said hollow space of said base member and fixed in position by resin poured into said hollow space, the roots of said comb teeth being then severed to separate said comb teeth from each other, thereby providing at least two independent external terminals,

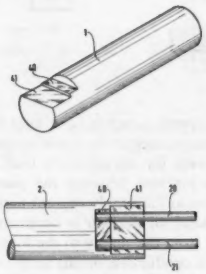
said capacitor chip having its two terminals directly connected to the portions of said at least two external terminals corresponding to said front ends of said comb teeth, whereby said capacitor chip and the front ends of said comb teeth are covered with said resin within said hollow space,

said apparatus further comprising a third comb tooth of said formed part inserted into said hollow space in addition to said two comb teeth, said third comb tooth abutting against that surface of said capacitor, the resilience of said third comb tooth acting to press said capacitor chip between said two comb teeth.

4,213,107
ELECTRO-MECHANICAL FILTER

Christian Bremon, Clamart; Anne Grannec, Paris; Remy Pery, Saint Jean le Blanc, and Joël Philippe, Orleans, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jan. 31, 1979, Ser. No. 8,198
Claims priority, application France, Feb. 10, 1978, 78 03792
Int. Cl.[2] H03H *9/24, 9/26, 9/00*
U.S. Cl. 333—197 **3 Claims**



1. An electro-mechanical frequency band-pass filter comprising an inlet electro-mechanical transducer, an outlet electro-mechanical transducer and a mechanical filter, said mechanical filter comprises a set of resonators, each vibrating longitudinally at a half wavelength of the central frequency of the filter, and a set of couplers, connecting the resonators to each other and to the inlet and outlet transducers, each vibrating longitudinally at a quarter wavelength of the central frequency of the filter, the improvement wherein each coupler is fixed to a first recessed, stepped flat in the surface of the corresponding resonator, said first recessed flat being formed near one of the ends of the resonator and at the level of a node point in bending vibration of the resonator, and wherein the resonator has a second recessed, stepped flat which is adjacent to the first flat and extends to the face of said near end of the resonator, and said second flat forming a deeper step in the surface of the resonator than that formed by said first flat.

4,213,108
SWITCH STRUCTURE HAVING PARTS EMBEDDED IN PLASTIC

Harry R. Gross, 127 Carpenter St., West Branch, Mich. 48661

Division of Ser. No. 632,405, Nov. 17, 1975, Pat. No. 4,112,576. This application Jul. 10, 1978, Ser. No. 922,994
Int. Cl.[2] H01H *50/02*
U.S. Cl. 335—131 **32 Claims**

1. Switch structure which comprises,

a solenoid unit having a casing, a coil therein and a plunger opening within the coil,

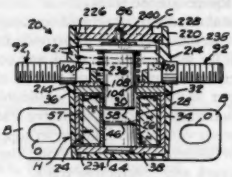
a plurality of terminals, each terminal having a shank and a head, each head being provided with a contact surface,

said unit and portions of said shank and head of each terminal all being embedded in an integral, common body of plastic injection molded therearound,

the portions of said plastic molded around said terminal

portions of themselves being effective to anchor said terminals so that said surfaces thereof are secured in a predetermined location and orientation relative to said solenoid unit,

said plastic having molded therein an opening aligned with said plunger opening,



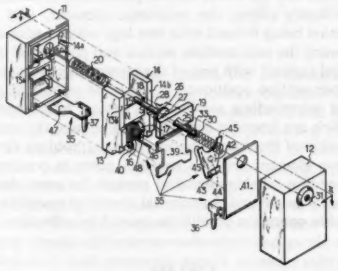
a magnetic plunger movable within said openings and a contact member on said plunger movable to and from engagement with said contact surfaces responsive to actuation and deactuation of said solenoid unit.

4,213,109

ELECTROMAGNETIC TRIPPING DEVICE

Bruno Marcoz, Nogent-sur-Marne, France, assignor to Compagnie Generale d'Appareillage Electrique C.G.A.E., Paris, France

Filed Jul. 28, 1978, Ser. No. 929,694
Int. Cl.[2] H01H 9/20
U.S. Cl. 335—174 **8 Claims**



1. An electromagnetic tripping device comprising in combination:

(a) two magnetic flux conductive side-walls spaced in substantially parallel relationship to each other with each side-wall including an edge which is coplanar with an edge of the other side-wall;

(b) bar magnet means extending between the side-walls for forming a magnetic holding flux in a direction perpendicular to said side-walls;

(c) energizing coil means extending between said side-walls for producing a magnetic breaking flux in a direction parallel to said magnetic holding flux in response to an electrical signal being applied thereto, said energizing coil means including first and second leads across which said electrical signal is applied;

(d) a magnetic flux conductive transverse plate adjacent said side-walls, said transverse plate being movable from a contact position in which said plate is in contact with both of said coplanar edges to close a magnetic circuit of said holding flux through said side-walls and said bar magnet means, and a break position in which said transverse plate is spaced from both of said coplanar edges, said transverse plate being held in said contact position by said holding flux and said transverse plate including an opening therethrough;

(e) an actuating rod freely passing through said opening, and guide means for guiding said actuating rod and transverse plate in translation along a same direction of displacement which is perpendicular to said direction of said magnetic holding flux;

(f) return spring means coupled to said actuating rod and said transverse plate for applying a tripping force thereon in a direction which will move said transverse plate from said contact position; and

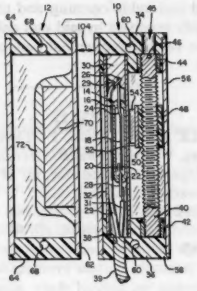
(g) a breaking circuit including said energizing coil means, a first collecting pole adjacent said side-walls and electrically connected to said first lead of said energizing coil means, a second collecting pole arranged parallel with said first collecting pole and including a first terminal, a contact blade located between said first and second collecting poles, said contact blade including one end secured to said second collecting pole, another end in the path of movement of said transverse plate and a flexible portion extending between said one and said other end, said contact blade being movable by said transverse plate from being in electrical contact with said first collecting pole and closing said breaking circuit when said transverse plate is in said contact position to being out of contact with said first collecting pole and opening said breaking circuit when said transverse plate is in said break position, and a third collecting pole electrically connected to said second lead of said energizing coil means and including a second terminal, so that when said transverse plate is in said contact position and an electrical signal in excess of a predetermined value is applied across said first and second terminals said breaking flux reduces said holding flux so that said transverse plate is moved to said break position by said return spring means which moves said contact blade and opens said breaking circuit.

4,213,110

PROXIMITY SWITCH HAVING ADJUSTABLE SENSITIVITY

Thomas J. Holce, 10905 SW. 5th #250, Beaverton, Oreg. 97005

Filed Jul. 20, 1978, Ser. No. 926,443
Int. Cl.[2] H01H 36/00
U.S. Cl. 335—207 **10 Claims**



1. A switch device for controlling an electrical circuit in response to the presence of an external magnetic field, said device comprising:

(a) a reed switch having at least a first contact and a second contact, said reed switch including magnetic reed means for causing relative movement between said contacts in response to the presence of an external magnetic field, said magnetic reed means having a longitudinal axis;

(b) an elongate permanent biasing magnet having an axis of polarity;

(c) screw means for moving said elongate permanent biasing magnet parallel to said longitudinal axis for adjusting the sensitivity of said reed switch to said external magnetic field; and

(d) adhesive means for attaching said elongate permanent

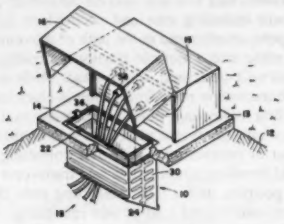
biasing magnet to said screw means such that said axis of polarity is parallel to said longitudinal axis of said magnetic reed means and a predetermined distance therefrom.

4,213,111

GROUND LEVEL TRANSFORMER UNIT

Robert J. Lux, Jr., Broken Arrow, Okla., assignor to Thermodynamics Corporation, Broken Arrow, Okla.

Filed Aug. 28, 1978, Ser. No. 937,517
Int. Cl.² H01F *15/02*
U.S. Cl. 336—65 **4 Claims**



1. A ground level transformer unit for connection to underground cables, including:

a horizontal pad having an upper and a lower surface, the lower surface being adapted to rest upon the earth, and the upper surface adapted to receive a transformer thereon, the pad having a vertical cable opening providing means to receive underground cables therethrough; and

a transformer positioned on said pad having means for connection to underground cable extending through said cable opening, the improvement comprising:

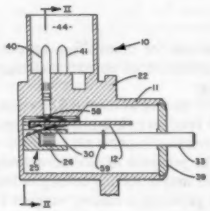
a cable vault of vertical, hollow, open-top and open-bottom construction, and of cross-sectional dimensions to receive underground cables therethrough while providing space to accept slack in the cables, the cable vault having an upper shoulder portion of dimensions less than the dimension of said pad cable opening and the shoulder portion being slidably received in said pad cable opening permitting relative vertical movement between said pad and the cable vault.

4,213,112

VARIABLE RESISTANCE POTENTIOMETER

Donald W. Alman, Whittier; Paul F. Gerwitz, West Covina, and Charles M. Tygard, Diamond Bar, all of Calif., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 22, 1979, Ser. No. 4,968
Int. Cl.² H01C *10/44*
U.S. Cl. 338—183 **2 Claims**



1. A potentiometer including

a housing,

a resistance element positioned within the housing having a base member of an electrically insulating material,

an electrical resistance track mounted on one side of the base member,

an electrically conductive track mounted on the same side of the base member in spaced relationship with the resistance track, and

electrical conductors mounted on the same side of said base member, and electrically connected to the opposite ends of the resistance track,

said electrical conductors and said conductive track terminating in terminating pads to provide input and output terminals for said resistance track and conductive track,

a contact member having first and second electrically connected wiper sections arranged in slidable contact with the resistance track and the conductive track respectively, carriage means within the housing to support the contact member for slidable movement along the length of said resistance track and conductive track,

actuating means extending into the housing to move the carriage means and the contact member with respect to the resistance element,

terminal posts to connect said terminating pads to an external electrical circuit, one end of said terminal post extending into the housing adjacent to the terminating pads of the electrical conductors and conductive track of the resistance element, and having an undercut portion within the housing,

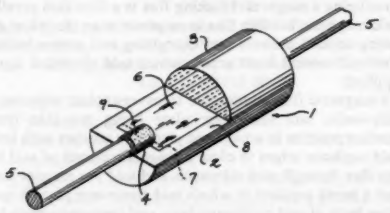
clip means to electrically connect the terminating pads of the resistance track and the conductive track of the resistance element to said terminal posts in the housing, each clip comprising an S-shaped, resilient, electrically conductive member having an upper section, an intermediate section and a lower section, the intermediate section and the lower section positioned to straddle and resiliently clamp the resistance element, said lower section being formed with two legs which are concaved toward the intermediate section and positioned in electrical contact with one of the terminating pads, and the upper section positioned in a spaced relationship with said intermediate section and having bifurcated arms which are laterally deflectable to engage the undercut portion of the terminal posts, thereby holding the resistance element and the terminal posts in position and providing reliable electrical contact between the resistance element and the external electrical circuit in undesirable operation conditions caused by vibrations.

4,213,113

ELECTRICAL RESISTOR ELEMENT AND METHOD OF MANUFACTURING THE SAME

Ivan L. Brandt, Milwaukee; Theodor von Alten, Grafton; Richard E. Voss, New Berlin, and Oscar L. Denes, Milwaukee, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Division of Ser. No. 851,031, Nov. 14, 1977, Pat. No. 4,155,064.
This application Sep. 8, 1978, Ser. No. 941,096
Int. Cl.² H01C *1/012*
U.S. Cl. 338—309 **3 Claims**



1. A resistor element comprising an insulating substrate member for a variable resistor, said member being formed of a ceramic-glass composition, a track of resistive material com-

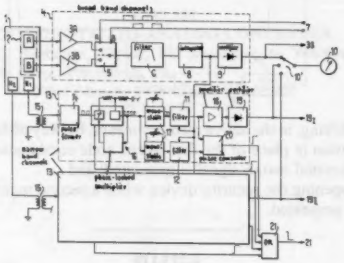
prising conductive particles dispersed in a glass matrix and deposited on said substrate member, a conductive collector track of conductive material deposited on said substrate member, a layer of metallic termination material capable of being soldered to a terminal lead member and deposited on selected areas of said substrate member, said areas respectively connected to said resistive track and to said collector track, said termination material having a softening temperature higher than the sintering temperature of the substrate member and of the resistive track.

4,213,114

VIBRATION MONITORING SYSTEM FOR AN AIRCRAFT ENGINE

Michel Cochard, Villars-sur-Glane, Switzerland, assignor to Vibro-Meter SA, Fribourg, Switzerland

Filed Mar. 7, 1979, Ser. No. 18,420
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—27 R **12 Claims**



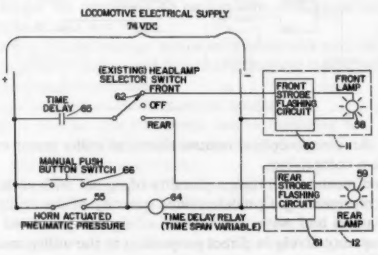
1. A vibration monitoring system for an aircraft engine, comprising at least two measuring feelers responsive to vibration, such feelers having similar characteristics and being exposed to the same vibration, means for producing measuring signals corresponding to the output at each of said feelers, comparator means for comparing said measuring signals and logic means interconnected with indicating means for detecting and indicating a normal condition when said measuring signals are substantially equal, a defect condition when said measuring signals differ from each other and an alarm condition when both said measuring signals exceed a safety limit.

4,213,115

VISUAL WARNING SIGNAL FOR A LOCOMOTIVE

Donald C. Wetzel, 63 Jacqueline Dr., Berea, Ohio 44017

Filed Mar. 10, 1978, Ser. No. 885,310
Int. Cl.[2] B61L *5/00*; G08B *7/00*; B60Q *1/26*
U.S. Cl. 340—47 **11 Claims**



1. A visual warning system for a locomotive having an audible warning device, which comprises:

a signal unit for mounting on the locomotive, said unit having a stroboscopic-type lamp connected to a stroboscopic-type flashing circuitry, portions of said unit surrounding said lamp having a coating of phosphorescent material for extending the perceived duration of each flash of said lamp; and

means responsive to the audible warning device on said locomotive for actuating said signal unit.

4. A visual warning system for a locomotive having an actuatable audible warning device, which system comprises:

pressure-responsive means for sensing the operation of said audible warning device;

a signal unit for mounting on the locomotive;

means connected to said sensing means for triggering said signal unit whereby said signal unit is actuated whenever said audible warning device is in operation; and

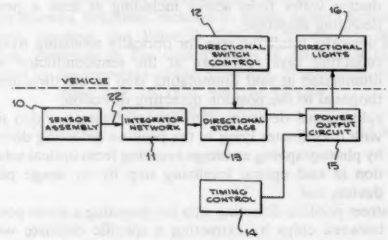
delay means for maintaining the actuation of said signal unit after operation of said audible warning device.

4,213,116

VEHICLE TURN DETECTION APPARATUS

Norman Holtzman, 3142 Barry Ave., Los Angeles, Calif. 90066; Robert J. Hromadka, 1301 Brockton Ave., Los Angeles, Calif. 90025, and Herbert H. Halperin, 13909 Riverside Dr., Sherman Oaks, Calif. 91403

Filed Jan. 22, 1979, Ser. No. 5,085
Int. Cl.[2] B60Q *1/34*
U.S. Cl. 340—73 **11 Claims**



1. A vehicle turn detection apparatus for use with a vehicle having directional signals comprising:

(a) a manual directional turn switch control having at least first and second switch positions;

(b) linear motion acceleration sensor means for detecting lateral movement of the vehicles, said linear motion acceleration detection means being mounted upon the vehicle;

(c) first and second memory storage elements having set and reset signal inputs, each having an output which comprises a signal responsive to the first or second position respectively of the manual directional turn switch control, the set input of said first and second memory storage elements being coupled to the first and second positions respectively of the manual directional turn switch control;

(d) integrator means for processing the value of an electrical signal, said integrator means connected intermediate said linear motion acceleration sensor means and the reset inputs of said first and second memory storage elements;

(e) timing control means for outputting an electrical signal which alternates between a high and low signal level; and

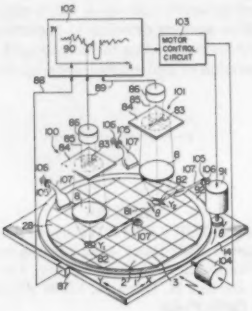
(f) first and second means for combining the output signals of said first and second memory storage elements respectively with the output electrical signal of said timing control means, said first and second means being connected to the directional signals.

4,213,117

METHOD AND APPARATUS FOR DETECTING POSITIONS OF CHIPS ON A SEMICONDUCTOR WAFER

Yukio Kembo, Yokohama; Asahiro Kuni, Tokyo, and Hiroshi Makihira, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 28, 1978, Ser. No. 964,353
Claims priority, application Japan, Nov. 28, 1977, 52-141643; Apr. 3, 1978, 53-38135; Apr. 12, 1978, 53-42115; Apr. 14, 1978, 53-43226
Int. Cl.[2] G06K 9/04
U.S. Cl. 340—146.3 H 11 Claims



1. A method for detecting positions of chips on a semiconductor wafer comprising the steps of:

an illuminating step for illuminating obliquely the semiconductor wafer from above including at least a position detecting direction;

an optically totalizing step for optically totalizing irregular reflecting rays reflecting at the semiconductor wafer illuminated at said illuminating step in the direction orthogonal to the position detecting direction;

a video signal detecting step for producing a video signal with coordinates lying in the position detecting direction by photographing an image resulting from optical totalization in said optical totalizing step by an image pickup device; and

a street position detecting step for detecting a street position between chips by extracting a specific ordinate with a wide width and a level corresponding to dark from the video signal produced at the video signal detecting step.

4,213,118

COMBINATION CHANGING SYSTEM AND METHOD

Leonard J. Genest, Santa Ana, and Vache B. Madenlian, Huntington Beach, both of Calif., assignors to Chromalloy Electronics Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 739,927, Nov. 8, 1976, abandoned. This application May 26, 1978, Ser. No. 910,052
Int. Cl.[2] H04Q 3/00; E05B 49/00
U.S. Cl. 340—149 R 10 Claims

1. A method of operating an electronic security device having an active memory means comprising the steps of

(1) storing a first code combination having a first field and a second field in the active memory means for defining a first stored code combination;

(2) applying key code combination having a first and a second field to the security device;

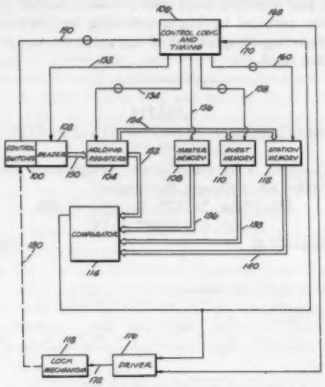
(3) comparing the first and second fields of the first stored code combination with the first and second fields of the key code combination respectively;

(4) generating a first match signal when the aforesaid compared code combination fields correspond;

(5) utilizing said first match signal to open the security device;

(6) comparing the second field of the first stored code combination with the first field of the key code combination when the aforesaid compared fields do not correspond;

(7) generating a second match signal when the second field of the first stored code combination and the first field of the key code combination correspond;



(8) storing, in the active memory means, the key code combination in place of the first stored code combination when a second match signal is generated; and

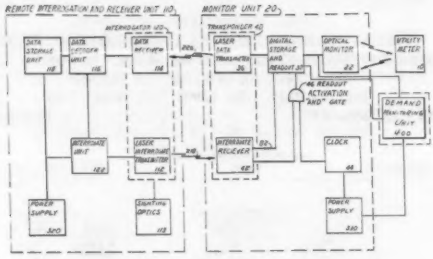
(9) opening the security device when a second match signal is generated.

4,213,119

REMOTE METER READING SYSTEM PROVIDING DEMAND READINGS AND LOAD CONTROL FROM CONVENTIONAL KWH METERS

Ernest M. Ward; Steven M. Ward, both of El Paso, Tex., and Michael A. Dils, Phoenix, Ariz., assignors to Energy Optics, Inc., Las Cruces, N. Mex.

Continuation-in-part of Ser. No. 681,502, Apr. 29, 1976. This application Nov. 7, 1977, Ser. No. 848,998
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.[2] H04Q 9/00; G01K 11/64
U.S. Cl. 340—151 16 Claims



1. An electro-optical remote electrical utility meter reading system comprising:

first means generating a plurality of signals with each signal representing a predetermined quantity of the utility measured and with the number of signals generated being quantitatively in direct proportion to the utility measured by the meter;

second means associated with said first means and being adapted to convert said signals into digital pulses;

third means having a memory receiving and storing said digital pulses;

fourth means having a memory module with logic circuitry providing time correlated intelligence reflecting the rate at which increments of electrical power are consumed;

fifth means comprising an electro-optical transponder effective in response to interrogation by laser radiation pulses to cause said third means to transfer pulses from said third means to said fifth means, and to emit said pulses in the form of laser radiation;

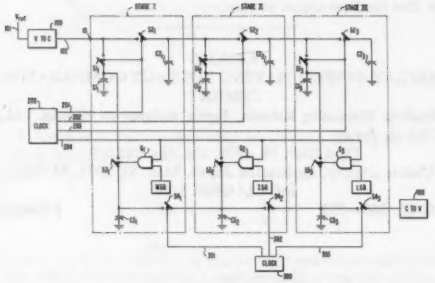
sixth means comprising an interrogator at a location remote from said transponder to trigger said interrogation and to receive said pulses from said transponder;

seventh means receiving signals from said interrogator for selectively providing intelligence reflecting the measured quantities.

4,213,120
CCD DIGITAL-TO-ANALOG CONVERTER

James E. Buchanan, Bowie, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 6, 1978, Ser. No. 883,440
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 DA **9 Claims**



1. A digital-to-analog converter having an input and an output, said converter comprising:

(a) a plurality of identical sequential electronic stages each having an input and first and second outputs, said plurality of stages including a first stage, at least one intermediate stage, and a last stage, the inputs of each of said intermediate stages coupled to the first output of the immediately preceding stage, the first output of each of said intermediate stages coupled to the input of the immediately succeeding stage:

(b) means for supplying an analog reference signal to the input of said first stage;

(c) a first charge storage means associated with each of said plurality of stages, said first charge storage means including potential well means;

(d) each of said plurality of stages having:

(1) a second charge storage means including first and second potential wells for dividing charge in said second charge storage means,

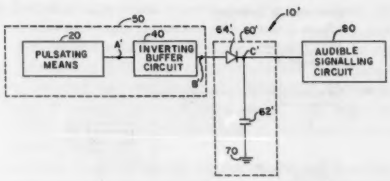
(2) transfer means for transferring charge in said first potential well to the associated first charge storage means in accordance with a predetermined digital signal, said transfer means including an AND gate having at least two inputs and including means for applying a digital signal to one of the inputs of said AND gate;

(e) sensing means coupled to the output of said converting means for sensing and measuring charge in said first charge storage means.

4,213,121
CHIME TONE AUDIO SYSTEM UTILIZING A PIEZOELECTRIC TRANSDUCER

Richard L. Learn, Indianapolis, and Louis P. Sweany, Carmel, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 8, 1978, Ser. No. 913,732
Int. Cl.[2] G08B *3/00*
U.S. Cl. 340—384 E **15 Claims**

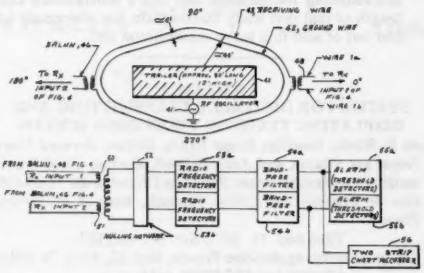


1. An audio system producing a chime tone audible signal comprising an audible signalling circuit including a piezoelectric transducer, circuit means for driving said audible signalling circuit and for causing a pulsed audible signal to be produced by said piezoelectric transducer, and means electrically interposed between said circuit means and said audible signalling circuit for exponentially decaying said pulsed audible signal to thereby produce a chime tone audible signal.

4,213,122
INTRUSION DETECTION SYSTEM

Walter Rotman, Brighton; Nicholas V. Karas, Lowell; Ronald L. Fante, Reading, and Peter R. Franchi, Winchester, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 23, 1978, Ser. No. 936,159
Int. Cl.[2] G08B *13/18*
U.S. Cl. 340—552 **9 Claims**

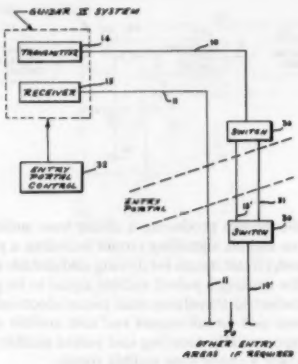


1. An intrusion detection system comprising a metallic structure to be protected from intrusion, a first loop of wire surrounding said metallic structure, a second loop of wire near and approximately concentric to said first loop of wire, means to radio frequency energize said metallic structure against ground to concentrate a near electromagnetic field pattern in the vicinity of said first and second wires, said first wire being a ground wire, said second wire being a receiver wire, said ground wire effecting concentration of the near electromagnetic field and in conjunction with said receiver wire defining a detection zone, said receiver wire intercepting and being responsive to the electromagnetic field radiated by said metallic structure, and means coupled to said receiver wire to detect any changes from the quiescent, undesturbed state of the concentrated near electromagnetic field pattern.

4,213,123
INTEGRAL ENABLE-DISABLE MEANS FOR GUIDED WAVE RADAR INTRUSION DETECTOR SYSTEM PORTALS

J. Leon Poirier, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 7, 1979, Ser. No. 10,093
Int. Cl.[2] G08B *13/18*
U.S. Cl. 340—552 **6 Claims**



1. In a guided wave radar intrusion detection system having first and second juxtaposed leaky transmission lines with means for transmitting radar signals along said first first leaky transmission line and receiving radar signals received by said second leaky transmission line, the improvement residing in an integral portal intrusion detection enabling-disabling device, said portal intrusion detection enabling-disabling device comprising, at each selected portal,

a segment of non-radiating transmission line traversing the portal in proximate paralled relationship to said first leaky transmission line, and

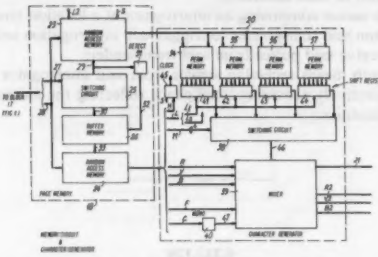
a switching means for selectively switching said segment of non-radiating transmission line and a substantially equal length of said first leaky transmission line alternately into and out of said first leaky transmission line.

4,213,124
SYSTEM FOR DIGITALLY TRANSMITTING AND DISPLAYING TEXTS ON TELEVISION SCREEN

Jean F. Barda, Gentilly; Roger Brusq, Betton; Bernard Marti, Noyal sur Vilaine, and Alain Poignet, Rennes, all of France, assignors to Etablissement Public de Diffusion dit "Telediffusion de France" and L'Etat Francais, both of Montrouge, France

Filed Sep. 14, 1977, Ser. No. 833,157
Claims priority, application France, Sep. 22, 1976, 76 29034
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—706 **4 Claims**

1. A receiver for a teletext system for digitally transmitting and displaying texts on a television screen, wherein a transmitter station broadcasts signals representing said text, said signals being in the form of data packs, sent over several channels, the data packs from different channels being randomly time multiplexed, each pack comprising a prefix signal for enabling a receiver to accept the data packs received over at least a selected channel and to reject data packs received over other channels, each of said data packs including the transmission in sequence of eight-bit words comprising, in addition to said prefix, page flags followed by page numbers and row flags followed by row numbers, escape eight-bit words followed by type identity eight-bit words, type identity eight-bit words, followed by a sequence of coded words identifying characters which are to be displayed in the same type which is identified by the identity words as determined by the preceding type identity words, said words receiver comprising first random access memory means for storing the coded character words at certain addresses, second random access memory means for storing the type identity words at the same certain addresses as the addresses of corresponding character words stored in the first random access memory, means for reading the words

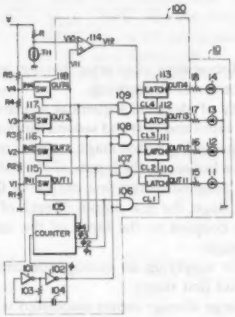


stored in the first random access memory means and at the same time as the read out if the words stored in the second random access memory, thereby simultaneously selecting a character and a type identity, and permanent memory means responsive to the read out of said second random access memory means for giving the shape of the characters read out from the first random access memory.

4,213,125
DISPLAY SYSTEM HAVING VOLTAGE COMPARATOR CIRCUIT

Shizuhisa Watanabe, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1978, Ser. No. 891,035
Claims priority, application Japan, Mar. 30, 1977, 52/34623
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—753 **2 Claims**



1. A display system wherein a plurality of display elements are driven by a voltage comparator circuit which produces output signals corresponding to a plurality of voltages preset for plural input signals when the voltage level of said input signals reaches the preset voltages respectively, said voltage comparator circuit comprising:

switch means for alternately supplying said plural input signals for predetermined time intervals in its alternate change-over action;

a comparator having one input terminal applied with said input signals alternately supplied from said switch means, the other output terminal applied with said present voltages, and an output terminal;

counter means for generating a timing signal;

control means for effecting the alternate change-over action of said switch means in accordance with said timing signal from said counter means and for successively applying said preset voltages to the other input terminal of said comparator in accordance with said timing signal from said counter means, so that said comparator successively produces said output signals corresponding to said preset voltages in synchronism with said timing signal;

a plurality of gate means connected between the output terminal of said comparator and said display elements respectively; and

means for selectively enabling said gate means in synchronism with said timing signal to energize the display element associated with the enabled gate means and corresponding to the preset voltage being applied to said comparator.

4,213,126

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)

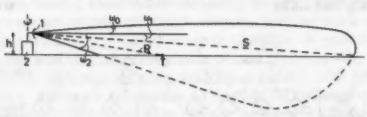
Willem Mulder, Borne; Dorotheus C. L. Vaessen, Hengelo, and Nicolaas H. De Lange, Rekken, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Dec. 13, 1978, Ser. No. 968,941

Claims priority, application Netherlands, Jan. 6, 1978, 7800163

Int. Cl.² G01S 7/34

U.S. Cl. 343—5 SM **4 Claims**



1. An ASDE radar comprising an antenna having an elevation-depending gain factor

$$G(\omega) = G(\omega_1) \cdot \frac{\csc \omega}{\csc \omega_1}$$

for $\omega_1 \leqq \omega < \omega_2$ where ω_1, ω and ω_2 represent angles of depression and a receiver having a sensitivity time control circuit.

4,213,127

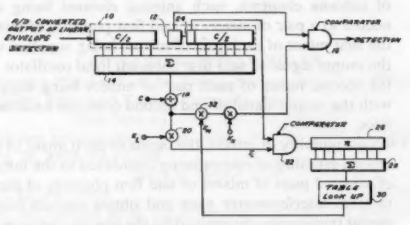
DOUBLY ADAPTIVE CFAR APPARATUS

Lanier G. Cole, Crofton, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 31, 1979, Ser. No. 8,144

Int. Cl.² G01S 9/02

U.S. Cl. 343—5 CF **3 Claims**



1. A doubly adaptive constant false alarm rate detector apparatus comprising in combination:

a shift register having a plurality of stages, said shift register receiving a digital input signal, each stage of said plurality of stages having an output, a stage one being selected to provide a first target output, said stage one being located substantially in the center of said plurality of stages, a stage two which is located subsequent to said stage one, being selected to provide a second target output,

a summing unit connected to said shift register to receive the output from each stage in said plurality of stages excluding stages one and two, said summing unit summing the outputs from said shift register to provide a total sum, said summing unit including a dividing means, said dividing means dividing said total sum by the number of stages in said shift register to provide a mean output,

a first detection means receiving said mean output, said first detection means receiving said second target output, said first detection means providing a first threshold signal in response to said mean output, said first detection means comparing said first threshold signal and said target output to provide a target level signal, said first detection means providing a control signal in response to said target level signal, and

a second detection means receiving said mean output, said second detection means receiving said control signal, said second detection means receiving a constant factor, said second detection means multiplying said means output first by said control signal and then by said constant factor to provide a second threshold signal, said second detection means receiving said first target output, said second detection means comparing said first target output and said second threshold signal to provide a target detection signal in response to the signal comparison.

4,213,128

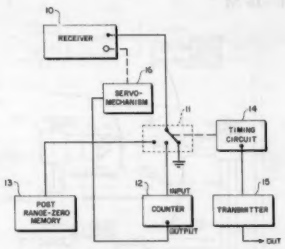
METHOD FOR DECREASING THE JAMMING SUSCEPTIBILITY OF SHORT RANGE INTERROGATORS

David M. Longinotti, Brick Town, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 572,537, Apr. 30, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 819,448

Int. Cl.² G01S 7/36

U.S. Cl. 343—6.5 R **3 Claims**



1. A method for decreasing the susceptibility of short range interrogators of the types which utilizes the delay time of the reply pulse as a code means to pulse jamming and spoofing comprising:

sampling the jamming and spoofing environment by counting replies received prior to range zero for each interrogation;

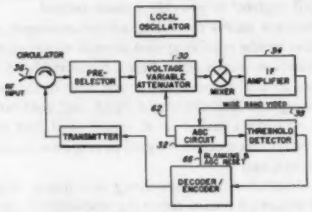
comparing the number of replies received prior to range zero to an acceptable reference number for each interrogation;

reducing the receiver sensitivity when the comparison indicates a number of replies received prior to range zero greater than said referenced number.

4,213,129
DELAY STABILIZING SYSTEM

Howard L. Kennedy, Scottsdale, and Keith M. Kingsbury, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1978, Ser. No. 960,255
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—6.8 R **9 Claims**



1. A method for stabilizing delay of a second pulse in a transponder when a first pulse of equal amplitude to that of the second pulse and the second pulse are sequentially present in at least a single pulse train in a receiver of the transponder, the method comprising the steps of:

measuring the amplitude of the first pulse in the receiver of the transponder;

controlling gain of the receiver as a function of said measured amplitude, said gain being held constant over a period of time including said second pulse;

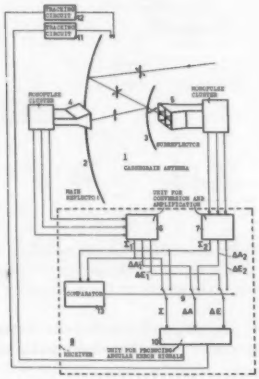
detecting a preset threshold level of only the second pulse at an output of said receiver; and

triggering a transmitted signal from the transponder responsive to said threshold detection.

4,213,130
MONOPULSE RADAR APPARATUS

Dorotheus C. L. Vaessen, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Oct. 16, 1978, Ser. No. 951,683
Claims priority, application Netherlands, Nov. 7, 1977, 7712216
Int. Cl.[2] G01S 9/22
U.S. Cl. 343—16 M **6 Claims**

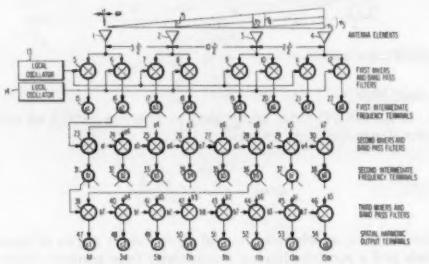


1. A monopulse radar system for automatic angle tracking of a moving target, said system comprising a first and a second monopulse cluster both adapted to receive r.f. signals in four receiving patterns symmetrically disposed with respect to the antenna axis of symmetry and to convert the r.f. signals into first and second sum signals and into first and second difference signals, said monopulse clusters being tuned to the same frequency band and arranged to receive mutually orthogonal polarisations with r.f. signals being transmitted through one monopulse cluster only; a receiver provided with a switching unit, said receiver, in response to the sum and the difference signals from the two monopulse clusters, delivering angular error signals, the amplitude and the polarity of each of said error signals being dependent upon the amplitude ratio between either the first sum signals and the relevant first difference signals, or the second sum signals and the relevant second difference signals, said amplitude ratio varying in accordance with target deviation with respect to the antenna axis of symmetry; and a tracking circuit for each of the angle coordinates, said tracking circuit being controlled by the relevant angular error signal from the receiver.

4,213,131
SCANNABLE BEAM FORMING INTERFEROMETER ANTENNA ARRAY SYSTEM

Julius A. Kaiser, Jr., Kensington, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 14, 1979, Ser. No. 39,031
Int. Cl.[2] H01Q 3/26
U.S. Cl. 343—844 **9 Claims**


ANTENNA ELEMENTS
LOCAL OSCILLATOR
LOCAL OSCILLATOR
FIRST MIXERS AND BAND PASS FILTERS
FIRST INTERMEDIATE FREQUENCY TERMINALS
SECOND MIXERS AND BAND PASS FILTERS
SECOND INTERMEDIATE FREQUENCY TERMINALS
THIRD MIXERS AND BAND PASS FILTERS
SPATIAL HARMONIC OUTPUT TERMINALS

1. A scannable, beam-forming interferometer antenna array system, comprising:

a plurality of antenna elements spaced from one another by integral multiples of a portion of the wavelength of the signal frequency, at least three pairs of antenna elements being selectable from said plurality of antenna elements,

first and second coherent local oscillators generating output signals having first and second frequencies, respectively,

a first plurality of mixers twice the number of said plurality of antenna elements, each antenna element being connected to a pair of mixers of said first plurality of mixers, the first mixer of each pair of mixers being supplied with the output signal of said first coherent local oscillator and the second mixer of each pair of mixers being supplied with the output signal of said second coherent local oscillator,

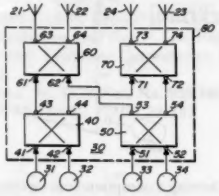
a second plurality of mixers, the inputs of each mixer of said second plurality of mixers being connected to the outputs of selected pairs of mixers of said first plurality of mixers to form interferometer pairs and obtain outputs having spatial frequencies determined by the spacing between the corresponding interferometer pairs, and

a third plurality of mixers, the inputs of each mixer of said third plurality of mixers being connected to the outputs of selected pairs of mixers of said second plurality of mixers to obtain outputs having spatial harmonics corresponding to the interferometer pairs.

4,213,132
ANTENNA SYSTEM WITH MULTIPLE FREQUENCY INPUTS

Allen R. Davidson, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 797,158, May 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 601,560, Aug. 4, 1975, abandoned. This application Jul. 19, 1978, Ser. No. 926,043
Int. Cl.[2] H01Q 21/00
U.S. Cl. 343—854 44 Claims



1. An improved multiple transmitter antenna system comprising:

a plurality of at least three electrical sources each generating an independent input signal at a different predetermined radio frequency;

a combining network means consisting of broadband components having bandwidths including all of the frequencies generated by said electrical sources, said network means simultaneously coupled to said plurality of sources for simultaneously receiving each of said input signals, maintaining isolation between said input signals, and substantially losslessly producing a number of isolated output signals equal in number to at least the number of said input signals, each one of said output signals being related to each and every one of said input signals; and

an antenna array coupled to said combining network, said array comprising a plurality of antenna element means, each of said antenna element means receiving and simultaneously radiating an associated one of said output signals, each of said antenna element means including means for shaping the associated radiated signal in a substantially independent directive associated radiation pattern having a single main unidirectional lobe, each lobe being directed away from all other antenna element means and in a substantially different direction than all other lobes and wherein said independently radiated lobes combine to form a desired composite radiation pattern for each of said plurality of electrical sources,

said respective electrical sources having said independent input signals and predetermined frequencies operating within a predetermined bandwidth to produce a composite radiation pattern substantially identical in shape and directivity for each of said plurality of different frequency electrical sources.

4,213,133
LINEAR ANTENNA ARRAYS

Kazutaka Hidaka, Yamato, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1978, Ser. No. 960,227
Claims priority, application Japan, Nov. 10, 1977, 52-135002; Aug. 28, 1978, 53-103803
Int. Cl.[2] H01Q 3/26
U.S. Cl. 343—854 13 Claims

1. An antenna array for providing a plurality of frequency independent, variable null point directions comprising:

a linear antenna array including three or more individual antenna elements,

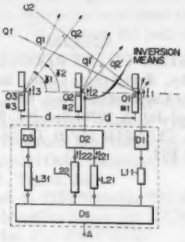
a plurality of individual power dividers each having a common port coupled to one of said individual antenna elements,

each of said individual power dividers also being provided with a number P_i of split ports where P_i is a binomial coefficient expressed by the equation

$$P_i = {}_{n-1}C_{i-1}$$

wherein n represents the number of antenna elements and i the number of a particular individual antenna element counted from one end of said array,

a plurality of phase shifting means coupled to said split ports for producing frequency dependent phase shift,



a common power divider having a single input port and a plurality of split ports coupled to said phase shifting means; and,

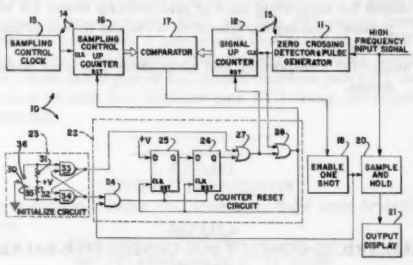
phase inversion means coupled to said individual antenna elements for reversing the phase signals applied to alternate antenna elements,

whereby a signal pattern is produced having a plurality of frequency independent null points, said null points positionable in predetermined directions.

4,213,134
CIRCUIT AND METHOD FOR THE RECORDER DISPLAY OF HIGH FREQUENCY PERIODIC SIGNALS

Chun-Fu Chen, North Canton, Ohio, assignor to The University of Akron, Akron, Ohio

Filed Feb. 26, 1979, Ser. No. 15,145
Int. Cl.[2] G01D 9/00; H03K 5/00, 17/00; G01D 4/10
U.S. Cl. 346—1.1 13 Claims



8. A method for the display of a high frequency periodic signal on a display having a maximum response frequency less than the periodic signal frequency, comprising the steps of:

counting in a signal period counter the number of periods in the high frequency periodic signal;

counting in a sampling control counter at a frequency substantially greater than the frequency of the high frequency periodic signal;

comparing the counts in said signal period counter and said sampling control counter and indicating a match thereof; and

sampling some electrical parameter of the high frequency

periodic signal when said match count is indicated and holding the same until the next said match count is indicated, and

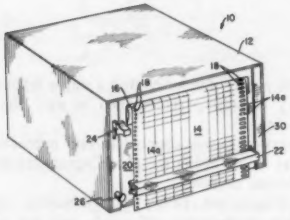
accurately reproducing the high frequency periodic signal at another frequency in a range of frequencies from zero up to and including the maximum response frequency of the display.

4,213,135

STRIP CHART RECORDER

Eugene Medvecky, Bridgeport, Conn., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,511
Int. Cl.[2] G01D *15/10, 15/24, 15/00*
U.S. Cl. 346—76 PH **38 Claims**



1. A device for recording graphical information on a strip chart which is movable with respect to the device, said recording device comprising:

a plurality of printing means arranged in side-by-side alignment transversely with respect to the direction of movement of the strip chart, each printing means including a plurality of independently actuable elements for marking the strip chart;

means for retaining said strip chart in contact with said printing means;

means for supporting each of said printing means for independent floating movement with respect to said retaining means; and

means for transporting said strip chart past said printing means.

4,213,136

ELECTRICAL CONTACT FOR CONDUCTIVE-BACKED PAPER

Leonard E. Jenkins, Jr., Denver, and Peter R. Lowe, Colorado Springs, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 2, 1978, Ser. No. 947,900
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—139 C **3 Claims**

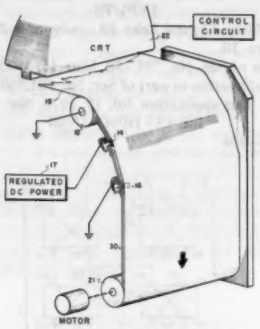
1. In a recorder for recording on a conductive-backed web, an apparatus for conducting electrical energy to the conductive backing on said paper comprising in combination;

a plate over which said web passes;

a slot in said plate;

an insulating member disposed beneath said slot;

a comb-like structure having a plurality of resilient fingers extending from a common base affixed to said insulating member;



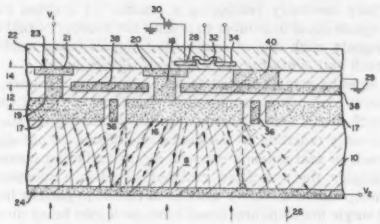
said fingers having a compound curve shape with the apex of one curve extending through said slot with the ends of said fingers disposed beneath said slot.

4,213,137

MONOLITHIC VARIABLE SIZE DETECTOR

Michael Y. Pines, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 16, 1976, Ser. No. 742,316
Int. Cl.[2] H01L *27/14, 31/00*
U.S. Cl. 357—30 **12 Claims**



1. In an image detector of the type having at least one optical detector operable to generate electrical charge signals in response to optical radiation, and having means for processing said signals comprising a charge coupled signal collecting device for transferring charge to a utilization circuit, the improvement comprising:

(a) a semiconductor substrate of a first conductivity type having first and second adjacent epitaxial layers of a second conductivity type monolithically formed thereon;

(b) at least one optical detector region formed in said substrate and having at least one surface accessible to optical radiation and operative to generate charge in response to received radiation;

(c) a degeneratively doped layer of a second conductivity type disposed in the vicinity of a predetermined portion of the interface between said first epitaxial layer and said second epitaxial layer, whereby said degeneratively doped layer shields said substrate from said charge coupled device;

(d) means adjacent to said semiconductor substrate for collecting and transferring charge from a predetermined portion of said semiconductor substrate to a predetermined portion of said second epitaxial layer;

(e) means adjacent to said semiconductor substrate for controlling the effective size of said optical detector region;

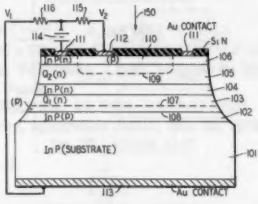
(f) an insulating layer of dielectric material formed on said second epitaxial layer;

(g) a plurality of electrode means spaced from said second epitaxial layer by at least a portion of said insulating layer for forming said charge coupled signal processing device in said insulating and second epitaxial layers to transfer signal charges from said detector element through said collection and transfer means and through said second epitaxial layer to said utilization circuit in response to cyclical voltage applied to said electrode means to thereby control the potential profile in said second epitaxial layer.

4,213,138
DEMULTIPLEXING PHOTODETECTOR

Joe C. Campbell, Middletown, and Tien P. Lee, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 14, 1978, Ser. No. 969,346
Int. Cl.² H01L *27/14, 29/161*
U.S. Cl. 357—30 **6 Claims**

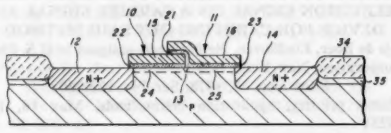


1. A multiwavelength semiconductor device comprising a substrate, a bottom semiconductor layer of one conductivity type epitaxially grown on said substrate, a plurality of semiconductor layers of the opposite conductivity type epitaxially grown on said bottom layer, and a top semiconductor layer of said one conductivity type epitaxially grown on said plurality of layers, characterized in that the layer in said plurality of layers adjacent to said bottom layer and the layer in said plurality of layers adjacent to said top layer have unequal bandgaps each one of which is less than the bandgap of said top and bottom layers, each of said two adjacent layers having a diffused pn junction within the layer, said two adjacent layers being separated by at least one barrier layer having a bandgap higher than either of said adjacent layers, and an electrode means for independently coupling potentials to the pn junction in each of said adjacent layers.

4,213,139
DOUBLE LEVEL POLYSILICON SERIES TRANSISTOR CELL

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 18, 1978, Ser. No. 907,234
Int. Cl.² H01L *27/02*
U.S. Cl. 357—41 **6 Claims**

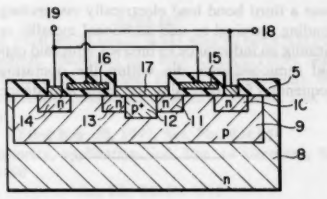


1. A semiconductor device comprising a pair of series-connected transistors formed in a face of a semiconductor body, each transistor having a source-to-drain path and a conductive gate, the conductive gates being composed of polycrystalline silicon, a thin inversion layer being formed beneath the conductive gate of either transistor when a gate voltage greater than a threshold is applied, one end of the source-to-drain path of a first of the transistors being integrally connected in series with one end of the source-to-drain path of the second of the transistors via said inversion layers, the source or drain of each of the transistors at said one end of the source-to-drain paths being formed by the edge of said inversion layer beneath the gate of the other of the transistors, the gate of the second transistor being adjacent to and partially overlying the gate of the first transistor but insulated therefrom by an insulating layer, a pair of heavily-doped regions in the face in the semiconductor body at the other ends of the source-to-drain paths of the first and second transistors forming sources or drains self-aligned at one edge with edges of said conductive gates, there being no heavily-doped source or drain region in the face of the semiconductor body between the pair of transistors.

4,213,140
INSULATED-GATE SEMICONDUCTOR DEVICE

Takeaki Okabe, Kokubunji; Isao Yoshida, Tokyo; Mineo Katsueda, Kokubunji; Hidefumi Ito; Masatomo Furumi, both of Takasaki, and Shikayuki Ochi, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,371
Claims priority, application Japan, Jul. 22, 1977, 52-87396
Int. Cl.² H01L *27/07*
U.S. Cl. 357—41 **16 Claims**



1. An insulated-gate semiconductor device comprising a semiconductor substrate of one conductivity type, a first region which is formed in a surface of said substrate and which has a conductivity type opposite to that of said substrate, and first and second insulated-gate FET's which are formed within said region and all of which are one channel type insulated-gate FET's; a drain of said first insulated-gate FET, a drain of said second insulated-gate FET and said first region being electrically connected; a gate of said first insulated-gate FET and a source of said second insulated-gate FET being electrically connected; a gate of said second insulated-gate FET and a source of said first insulated-gate FET being electrically connected.

4,213,141
HYBRID TRANSISTOR

Elio J. Colussi, Ambler, Pa., assignor to Solid State Scientific Inc.

Filed May 12, 1978, Ser. No. 905,213
Int. Cl.² H01L *23/02, 23/12, 39/02*
U.S. Cl. 357—74 **11 Claims**

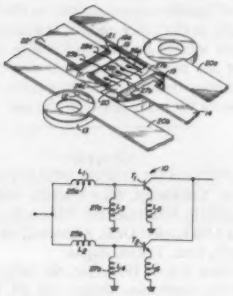
1. A semiconductor device to provide in an input circuit a substantially low reactance and a relatively high resistance within a range of operating frequencies to improve the impedance match between the semiconductor device and an energy source comprising

an electrically insulating body member, said body member having disposed thereon an input and an additional metallic contact area in an electrically insulated and spaced relationship with each other,

a semiconductor die disposed on the body member and having at least an input and a common bonding terminal having capacitance and resistance between said bonding terminals,

at least a first bond lead electrically connecting said input bonding terminal to said input metallic contact area,

means connecting at least a second bond lead between said common bonding terminal and said additional metallic contact area, and



at least a third bond lead electrically connecting said input bonding terminal to said additional metallic contact area forming an inductance to interact with said capacitance of said semiconductor die within the operating range of frequencies for increasing the input impedance.

4,213,142

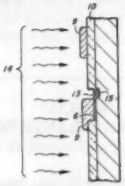
SEMICONDUCTOR DEVICE AND METHOD

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 797,273, May 16, 1977, which is a division of Ser. No. 573,676, May 1, 1975. This application Apr. 23, 1979, Ser. No. 32,597

Int. Cl.[2] H01L 29/72

U.S. Cl. 357—91 **8 Claims**



1. A semiconductor device formed at a face of a semiconductor body having particular regions in the body at said face and layers on the body at said face, the regions and layers determining the operative characteristics of the device, at least one of said layers being offset with respect to an underlying one of the regions sufficiently to produce a portion of misregistration thereby correspondingly creating a potentially defective area, and an ion implanted region at said face within the semiconductor body at said potentially defective area, said ion implanted region having a charge carrier concentration greater than semiconductor material underlying it to prevent inversion from ambient impurities and thereby prevent potential defects from developing.

4,213,143

COLOR TELEVISION CONVERSION APPARATUS FOR USE WITH A CONVENTIONAL DOMESTIC REPRODUCER

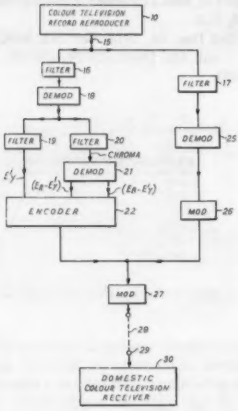
Sidney C. Jones, Thorn House, Upper St. Martin's La., London W02H 9ED; Henry R. Lindsay, 22 Kinloch Dr., Kingsbury London N.W. 9, and Denis W. Heightman, Thorn House, Upper St. Martin's La., London W02H 9ED, all of England

Filed Nov. 9, 1977, Ser. No. 849,903

Claims priority, application United Kingdom, Nov. 10, 1976, 46821/76

Int. Cl.[2] H04N 5/79

U.S. Cl. 358—4 **2 Claims**



1. Colour television conversion apparatus comprising,

(a) mechanism for moving a colour television record past a pick-up device at a speed to reproduce colour television signals recorded on the record in accordance with the field and line standards in the United States of America of 60 field scans and 525 line scans per picture,

(b) decoding apparatus,

(c) means to apply the said reproduced signals to the said decoding apparatus to recover the luminance and demodulated colour-difference signals therefrom,

(d) encoding apparatus, and

(e) means to apply said recovered luminance and demodulated colour-difference signals to said encoding apparatus to produce therefrom a hybrid signal in which the field and line scanning frequencies are in accordance with the standards of the United States of America and the colour-difference signals are encoded therewith in accordance with the European PAL or SECAM standards.

4,213,144

METHOD OF MODULATING A COMPOSITE COLOR TELEVISION SIGNAL ON A CARRIER SIGNAL AND DEVICE FOR CARRYING OUT SAID METHOD

Eeltje de Boer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 15, 1978, Ser. No. 933,960

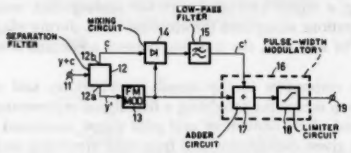
Claims priority, application Netherlands, May 16, 1978, 7805231

Int. Cl.[2] H04N 9/02

U.S. Cl. 358—12 **12 Claims**

1. A method of modulating a composite colour television signal, having a luminance signal and a chrominance signal with a fixed chrominance subcarrier wave frequency, on a carrier wave, the luminance signal being frequency-modulated on the carrier wave and the chrominance signal being modulated on the carrier wave whereby the original composite

colour television signal can be recovered by a single frequency demodulation of said modulated carrier wave, wherein said method comprises translating the chrominance signal to the frequency of a subcarrier wave which is situated at a frequency



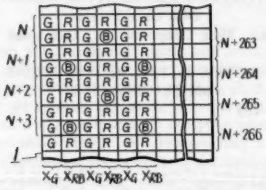
distance equal to the chrominance signal frequency below the frequency of the carrier wave which has been frequency modulated by the luminance signal, and then pulse-width modulating said frequency-modulated carrier wave with the chrominance subcarrier wave.

4,213,145

SOLID STATE COLOR TELEVISION CAMERA

Fumio Nagumo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,727
Claims priority, application Japan, Jan. 30, 1978, 53-9141
Int. Cl.[2] H04N *9/07*
U.S. Cl. 358—43 **9 Claims**



1. A solid state color camera employing at least one solid state image sensing device which simultaneously reads out signals of adjacent two rows of sensing elements as a video signal of a single horizontal scan line in sequence with an interlacing technique, comprising:

(A) color coding filter means having a plurality of color elements corresponding to respective sensing elements of said solid state image sensing device, said filter means being arranged to have successive sets of color elements each consisting of a first color element and three second color elements in the vertical direction, and

(B) color signal processing means for separating first and second color signals corresponding to said first and second color elements by arranging two adjacent lines of video signals derived from said solid state imaging device.

4,213,146

SCANNING SYSTEM FOR LIGHT BEAM DISPLAYS

Theodore H. Maiman, Marina del Réy, Calif., assignor to Laser Video, Inc., Los Angeles, Calif.

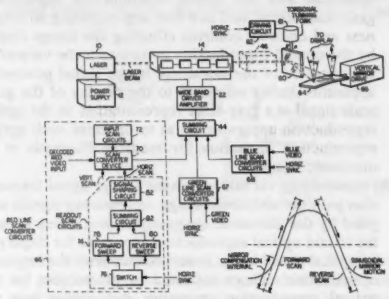
Division of Ser. No. 484,551, Jul. 1, 1974, Pat. No. 4,084,182. This application Mar. 24, 1978, Ser. No. 889,724
Int. Cl.[2] H04N *9/14, 5/74, 3/08;* G02B *27/17*
U.S. Cl. 358—63 **7 Claims**

1. A system for line scanning at a high repetition rate, and with linear motion, a light beam modulated with data signals provided in successive line form comprising:

light intensity modulator means disposed in the path of the light beam;

an electromechanical scanning mechanism disposed in the light beam path subsequent to said modulator means, said scanning mechanism operating with a cyclic forward and reverse motion to deflect the light beam in a line scanning fashion;

and modulator energizing means coupled to said modulator



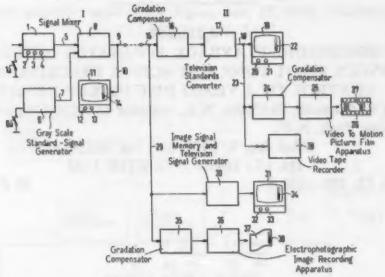
means, said energizing means including line converter means responsive to the data signals for alternately reversing the time sequences of alternate data signal lines read out to said modulator means.

4,213,147

SYSTEM FOR BUILD-UP AND REPRODUCTION OF ULTRASONIC IMAGES ON REPRODUCTION MEDIA

Heinrich von Buenau, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 20, 1977, Ser. No. 834,914
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644190
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—112 **6 Claims**



1. A method for the buildup of ultrasonic images which are obtained on the basis of scanning of a subject by means of ultrasonic waves, and for converting these images, arriving as a sequence of ultrasonic echoes, into an optical visual image; and utilizing:

an ultrasonic image signal processing apparatus which radiates ultrasonic impulses into the subject to be examined and which again receives the ultrasonic echoes reflected in the subject and converts them into ultrasonic image representing electric signals, the ultrasonic image signal processing apparatus including adjustment means for the purpose of adjusting parameters with regard to radiated or received ultrasonic waves, respectively; and

an optical reproduction apparatus for the purpose of reproducing the ultrasonic echoes in the form of an optical visual image; and

an ultrasonic image signal transmission path for the ultra-

sonic image representing electric signals; characterized by the following method steps:

(a) mixing into the ultrasonic image signal transmission path between the ultrasonic image signal processing apparatus and the optical reproduction apparatus a gray-scale signal, and as a first step adjusting all brightness and contrast controls affecting the image display by the optical reproduction apparatus to be viewed by the operator of the ultrasonic image signal processing apparatus during reference to the display of the gray-scale signal as a gray-scale representation on the optical reproduction apparatus, so as to optimize such optical reproduction apparatus for medical diagnosis of an ultrasonic image;

(b) transmitting via said ultrasonic image signal transmission path the ultrasonic image representing signals supplied by the ultrasonic image signal processing apparatus to said optical reproduction apparatus for display of an optical visual image in accordance with the sequence of ultrasonic echoes reflected in the subject on the optical reproduction apparatus; and mixing into the ultrasonic image signal transmission path, concurrently with the transmission of the ultrasonic image representing signals thereby, the gray-scale signal so that the gray-scale representation is displayed on the optical reproduction apparatus along with the display of the optical visual image in accordance with the sequence of ultrasonic echoes; and

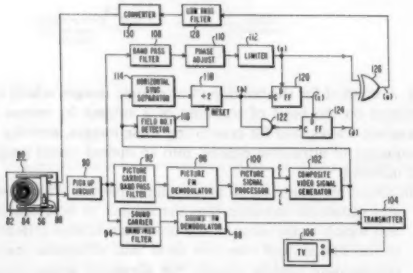
(c) during display of the sequence of ultrasonic echoes and the gray-scale representation according to step (b), and after completion of all brightness and contrast adjustments, as specified in step (a), adjusting the ultrasonic image signal processing apparatus as to ultrasonic parameters including depth compensation and dynamic compression by means of said adjustment means in such a fashion that there results on the optical reproduction apparatus a correspondingly adjusted optical visual image while the optical reproduction apparatus remains adjusted with reference to the display of said gray-scale representation.

4,213,148

RECORDING/PLAYBACK APPARATUS USING A SINGLE PILOT TONE FOR ACTIVE TRACKING AND CONTROL OF A VIDEO DISC PICKUP DEVICE

Jon K. Clemens, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1978, Ser. No. 938,963
Int. Cl.[2] H04N 5/76; G11B 3/38
U.S. Cl. 358—128.6 **20 Claims**



1. In a playback apparatus for use with a disc record having an information track comprising a plurality of convolutions containing recorded representations of signal information including phase reference information and a pilot signal, said pilot signal being recorded such that each convolution of said information track contains a non-integral number of cycles of said pilot signal, the phase of said pilot signal in a given convolution having a known relationship with respect to the phase of said pilot signal in an immediately preceding convolution and the phase of said pilot signal in the convolution immediately succeeding said given convolution, said playback apparatus including a signal pickup means for sensing said recorded representations along said information track during playback rotation of said disc, the tracking control apparatus comprising:

means responsive to the signals provided by said signal pickup means for providing a first signal representing the sensed phase content of said pilot signal recovered from said given convolution and from said preceding and succeeding convolutions;

means responsive to said signals provided by said signal pickup means sensed from said given convolution for providing a phase reference signal;

means for comparing the phase of said first signal and said phase reference signal for providing an error signal; and

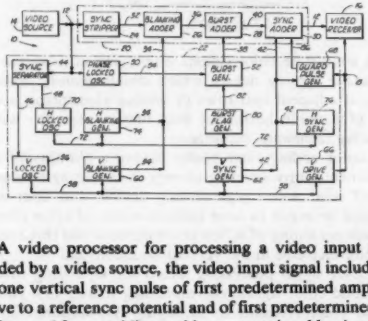
means responsive to said error signal for maintaining said signal pickup means in a desired location along said information track.

4,213,149

APPARATUS FOR PREVENTING VIDEO TAPE DUPLICATION

Mike A. Janko, 5821 Cheyenne Ct., Oklahoma City, Okla. 73132

Filed Dec. 26, 1978, Ser. No. 972,906
Int. Cl.[2] H04N 5/78
U.S. Cl. 358—153 **6 Claims**



1. A video processor for processing a video input signal provided by a video source, the video input signal including at least one vertical sync pulse of first predetermined amplitude relative to a reference potential and of first predetermined time duration, and for providing a video output signal having modified vertical sync pulses, the video processor comprising:

a video processing circuit connected to the video source, the video processing circuit receiving the video input signal and guard pulses, and adding the received guard pulses to the received video input signal at a second pre-determined amplitude which is less than the first predetermined amplitude relative to the reference potential for output as the video output signal having modified vertical sync pulses; and

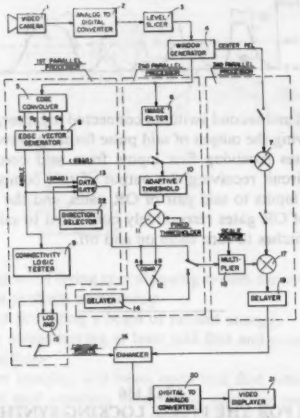
a sync generator connected to the video source and to the video processing circuit, the sync generator receiving the video input signal, detecting the vertical sync pulses of the received video input signal, and providing the guard pulses a second predetermined time duration after each detected vertical sync pulse, the second predetermined time duration being less than the first predetermined time duration.

4,213,150

REAL-TIME EDGE PROCESSING UNIT

Guner S. Robinson, Los Angeles, and James J. Reis, La Palma, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 21, 1978, Ser. No. 898,970
Int. Cl.[2] H04N 5/14
U.S. Cl. 358—166 4 Claims



1. A system for processing video data in digital form to identify and enhance pictorial edges comprising:

a. window generator means for operating on the input video data for generating digital data in parallel form which represents a sequence of 3×3 arrays of picture elements, and generating digital data representing a sequence of picture elements at the centers of the 3×3 arrays,

b. two parallel processing means comprising one parallel processor means for operating on the digital data, which represents the sequence of 3×3 arrays of picture elements, to identify and locate pictorial edges within the sequence of 3×3 arrays by means of edge sensitive masks and connectivity requirements, and another parallel processor means for operating on the digital data representing the sequence of center picture elements for introducing a time delay in the data equal to the time delay introduced by the first parallel processing means,

c. enhancer means for receiving the outputs of the two parallel processor means and selectably increasing or decreasing the magnitude or brightness of the center picture elements as represented by the digital data output from the second of the two parallel processor means, in response to the output from the first of the two parallel processor means.

4,213,151

AGC KEYING SIGNAL CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

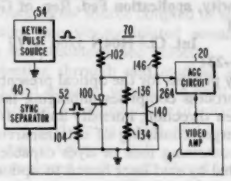
Filed Aug. 18, 1978, Ser. No. 934,835
Int. Cl.[2] H04N 5/52
U.S. Cl. 358—178 12 Claims

1. In an automatic gain control circuit of the type including an automatic gain control voltage generator keyed by a keying signal and responsive to the signal level of synchronizing signal components of a composite video signal for providing a gain control potential, an automatic gain control keying signal circuit comprising:

a source of synchronizing signals comprising pulses of different time duration;

a source of recurrent pulses normally in a substantially constant phase relationship with said synchronizing signal pulses, said recurrent pulses having a substantially constant time duration which is longer than the shortest duration ones of said synchronizing pulses;

a controlled current path responsive to said synchronizing signal pulses and said recurrent pulses which is rendered



conductive upon the coincidence of a synchronizing signal pulse and a recurrent pulse and which ceases conduction only upon the termination of said recurrent pulse; and

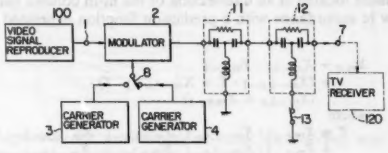
means for generating a keying signal for said automatic gain control voltage generator in response to conduction by said controlled current path.

4,213,152

OUTPUT CIRCUIT FOR VIDEO TAPE RECORDER

Kazuaki Kakinuma, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 25, 1979, Ser. No. 6,515
Claims priority, application Japan, Jan. 25, 1978, 53-6800[U]
Int. Cl.[2] H04N 5/76, 5/44
U.S. Cl. 358—186 3 Claims



1. An output circuit for a video signal reproducing apparatus which delivers a video signal acceptable to an RF input stage of a television receiver, comprising:

means for selectively generating carriers corresponding to two adjacent television channels having successive frequencies;

modulating means for modulating an output carrier from said carrier generating means with a video signal;

a first filter connected to an output of said modulating means for eliminating the lower sideband wave of the signal of the lower frequency carrier modulated with the video signal; and

a second filter connected in series with said first filter in an output path of said modulating means and adapted to be ganged with the selection of the carrier by said carrier generating means for eliminating the lower sideband wave of the signal of the higher frequency carrier when the higher frequency carrier is selected.

4,213,153
PROCESS FOR THE OPTICAL DISPLAY OF INFORMATION USING LASERS

Fritz P. Schäfer, Göttingen-Nikolausberg, Fed. Rep. of Germany, assignor to Max-planck-Gesellschaft zur Fordenberg der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,245

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2739081

Int. Cl.² H04N *5/66, 9/12*

U.S. Cl. 358—231 **23 Claims**

1. A display process for the optical presentation of information, which process comprises impinging laser beams modulated as to their direction, intensity and/or frequency, upon a transparent target consisting of a transparent sheet, film, or liquid layer containing ions or dyes capable of fluorescence which is excited by said laser beams to optical fluoresence.

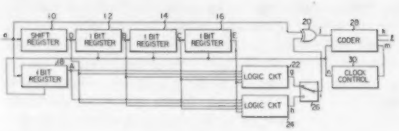
4,213,154
FACSIMILE COMMUNICATION SYSTEM

Fumitaka Ono; Takayoshi Semasa; Yutaka Ueno; Syuzi Iwata, and Ryoichi Ohnishi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1978, Ser. No. 930,505

Int. Cl.² H04N *7/12*

U.S. Cl. 358—260 **3 Claims**



1. A facsimile communication system comprising: a subject copy formed of a multiplicity of picture elements arranged in rows and columns; means for successively providing predicted values for object picture elements through the prediction conversion of a picture signal from each of said object picture elements effected by referring to the associated picture elements located adjacent to each object picture element including a logic circuit for calculating a binary predicted value $X_{m,n}$ of a picture element signal $X_{m,n}$ for an object picture element located at an intersection of the m-th column and n-th row in accordance with a prediction function expressed by

$$X_{m,n} = \underline{X}_{m-1,n} \cdot X_{m,n-1} + (\underline{X}_{m-1,n-1} \cdot \overline{T} + X_{m-1,n-1} \cdot T) \cdot (\underline{X}_{m-1,n} + \underline{X}_{m,n-1})$$

where

$$T = \underline{X}_{m,n-1} \cdot \underline{X}_{m-1,n-1} \cdot \underline{X}_{m+1,n-1} \cdot \overline{X}_{m-2,n-1} + \underline{X}_{m,n-1} \cdot \underline{X}_{m-1,n-1} \cdot \underline{X}_{m+1,n-1} \cdot \underline{X}_{m-2,n-1} + \underline{X}_{m,n-1} \cdot \underline{X}_{m-1,n-2} \cdot \underline{X}_{m-1,n-1} + \underline{X}_{m,n-1} \cdot \underline{X}_{m-1,n-2} \cdot \underline{X}_{m-1,n-1}$$

and X and T designate inversions of the X and T respectively; means for successively comparing said predicted values with actual values of said object picture elements to provide a series of prediction error signals, and means for encoding and transmitting said series of said prediction error signals.

4,213,155
PROCESS FOR IMPROVING IMAGE QUALITY IN PICTURE TELEGRAPHY

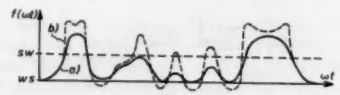
Jüergen Müenchow, Kiel, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 902,900

Int. Cl.² H04N *1/36*

U.S. Cl. 358—262 **13 Claims**

1. An improved facsimile system comprising scanning signal generating means connected to a scanning means which scans an original to be transmitted, a pulse forming network including a differentiator receiving the output signal of said scanning signal generating means to differentiate it, a two level to three level converter receiving the output signal of said pulse forming network which includes an inverter which inverts said output signal, a first switch receiving said output signal a second switch receiving the output of said inverter, the outputs



of said first and second switches connected together, a comparator receiving the output of said pulse forming network, a pair of OR gates receiving first inputs from said comparator, a flip-flop circuit receiving the output of said comparator and supplying inputs to said pair of OR gates, and the outputs of said pair of OR gates respectively connected to said first and second switches to turn them on and off.

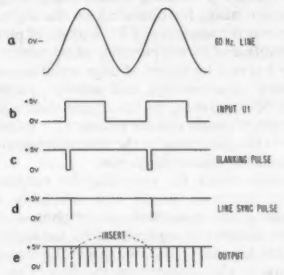
4,213,156
SYSTEM FOR THE PHASE LOCKING SYNTHESIZED HIGH FREQUENCY PULSES TO A LOW FREQUENCY SIGNAL

Douglas G. Jarrett, Altamonte Springs, Fla., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 24, 1978, Ser. No. 899,273

Int. Cl.² H04N *1/36*; H03B *3/06*

U.S. Cl. 358—275 **9 Claims**



6. A facsimile system comprising:

transducer means;

means for scanning a document or copy medium with said transducer means;

motor means coupled to said scanning means; and

drive means coupled to said motor means, said drive means comprising

a source of clock pulses;

a synthesizer of said higher frequency pulses coupled to said source, said synthesizer comprising dividing means reset in response to each of said higher frequency pulses; and

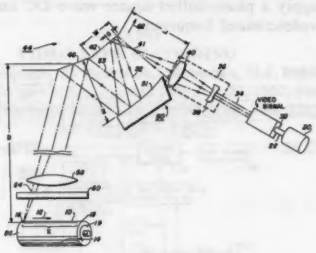
insertion means responsive to said low frequency signal for generating pulses to be periodically inserted between said higher frequency pulses, said inserted pulses having a frequency equal to said low frequency signal, said inserted pulses also resetting said dividing means.

4,213,157

SELF TRACKING LASER SCANNING APPARATUS

Leonard C. DeBenedictis, Los Angeles, and Gary K. Starkweather, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 5, 1979, Ser. No. 9,628
Int. Cl.[2] H04N 1/04
U.S. Cl. 358—293 12 Claims



1. An improved flying spot scanning system for scanning the surface of a medium comprising:

means for providing a beam of radiant energy;

scanning means having at least said first and second reflective surfaces;

means for imaging said beam upon said first reflective surface of said scanning means, said scanning means being positioned in the optical path of said imaged beam; and

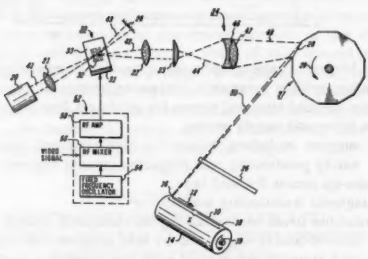
an optical element positioned adjacent said scanner, the light reflected from said first reflective surface being incident on said optical element and directed back thereby to said second reflective surface, said scanner means scanning said imaged spot across said medium by rotating said second reflective surface a desired angle to impart the information content of said beam to said medium, said beam being caused to track said second reflective surface during the rotation thereof.

4,213,158

OPTICAL DATA RECORDING SYSTEM UTILIZING ACOUSTIC PULSE IMAGING TO MINIMIZE IMAGE BLUR

Leonard C. DeBenedictis, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1978, Ser. No. 920,314
Int. Cl.[2] G11B 7/00; H04N 5/76
U.S. Cl. 358—296 7 Claims



1. An optical data recording system for recording information on a light sensitive member comprising:

means for providing a beam of radiant energy;

a Bragg diffraction light-sound interaction medium including a transducer coupled to an acoustic wave transmitting medium characterized by a predetermined acoustic wave propagation velocity,

scanning means having at least one reflective surface positioned in the optical path of said beam for scanning said beam across said member by rotating said reflective surface a desired angle to impart the information content of said beam to said member;

a video modulating signal source coupled to said transducer for propagating intensity-modulated acoustic waves in said medium at a predetermined velocity,

means for projecting through said medium in a direction transverse to said acoustic waves said light beam to produce in said medium a moving image of information corresponding to said modulating signal, said image moving at said predetermined velocity; and

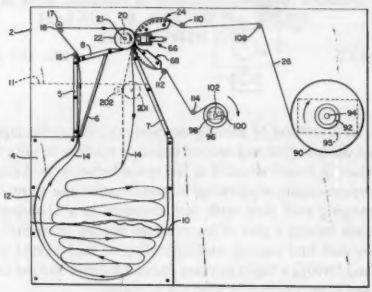
optical means interposed in the path of said intensity modulated beam and having magnification M associated therewith, said moving image being projected onto said scanned member within the envelope of said beam in a manner such that the velocity of said moving image is substantially equal to and in an opposite direction as the velocity of said scanning beam, the direction of movement of said beam and said image being substantially orthogonal to the direction of rotation of said medium.

4,213,159

PNEUMATIC CLAMPS AND THERMOMAGNETIC DUPLICATION

James L. King, Southboro, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Oct. 27, 1978, Ser. No. 955,373
Int. Cl.[2] G11B 5/86, 15/60
U.S. Cl. 360—16 36 Claims



1. Apparatus for maintaining at least one moving web in tight engagement with a roller comprising:

a nip member having a web-guiding surface with at least one passageway therein and means for connecting said at least one passageway to a source of pressurized gas;

support means for supporting said nip member for reciprocal movement relative to said support means whereby movement of said nip member relative to said support means results in a change of position of said web-guiding surface along a selected path;

said support means being adapted to support said nip member in proximity to a selected roller so that movement of said nip member in a first direction relative to said support means will result in movement of said surface along said selected path toward said selected roller; and

fluid-operated means for urging said nip member to move in said first direction relative to said support means so as to advance said surface toward engagement with a selected roller located in proximity to said nip member;

said surface and said at least one passageway being arranged so that pressurized gas exiting from said at least one passageway will be directed against a selected roller con-

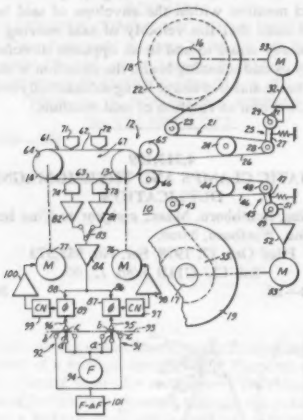
fronting said surface, whereby if a web is disposed between said surface and said selected roller, the gas exiting said at least one passageway will press said web into engagement with said selected roller and will exert a back pressure on said surface urging said surface away from said roller and web.

4,213,160

METHODS AND APPARATUS FOR DRIVING INFORMATION CARRIER TAPE

Edward K. Shum, Villa Park; Henry M. Martija, La Verne, and Leon E. Head, West Covina, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Aug. 21, 1978, Ser. No. 935,189
Int. Cl.[2] G11B *19/28*
U.S. Cl. 360—73 **44 Claims**



17. In a method of driving an information carrier tape with spaced distinct first and second capstans relative to information transducing means situated at the space between said capstans, the improvement comprising in combination the steps of:

arranging said tape with said capstans in a U-shaped tape path having a pair of leg portions spaced from each other by said first capstan and extending to said second capstan and having a bight portion formed by said second capstan and interconnecting said leg portions;

driving said tape with said first capstan;

driving said tape with said second capstan; and

electrically slaving the driving of one of said first and second capstans to the other of said first and second capstans.

4,213,161

MOTOR CONTROL FOR SLOW SPEED TAPE RECORDER

Edwin A. Dokus, Winchester, and David Banks, South Hamilton, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

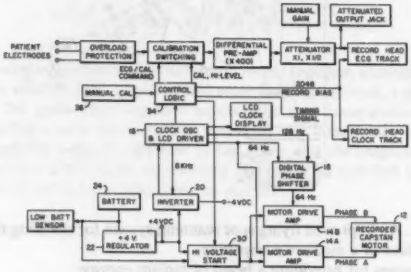
Filed Nov. 2, 1978, Ser. No. 956,829
Int. Cl.[2] G11B *15/46, 19/02*
U.S. Cl. 360—73 **4 Claims**

1. In a battery-powered slow-speed tape recorder for recording physiological information of an ambulatory patient, said recorder including tape transport means including a capstan tape drive and a take-up reel drive, a synchronous AC motor operatively coupled to at least said capstan, and battery means for supplying DC current to power said motor, an improved motor control comprising:

voltage regulating means for supplying current from said battery at a predetermined regulated voltage less than full battery voltage;

inverter means connected to said regulator means for converting DC current to a square wave DC current of predetermined frequency, said square wave being modulated to regulated voltage plus and minus about the common of said battery voltage;

phase-shifting means connected to said inverter means to supply a phase-shifted square wave DC current at said predetermined frequency;



means connecting said square wave DC and said phase-shifted square wave DC to said AC synchronous motor; and

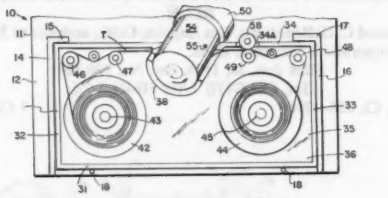
means for selectively supplying current at full battery voltage, square wave inverted and phase-shifted, to said AC synchronous motor in lieu of said regulated supply voltage whereby to afford synchronous operation of said motor throughout the full operating interval of the recorder.

4,213,162

MAGNETIC TAPE CARTRIDGE TRANSDUCING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Dec. 30, 1977, Ser. No. 865,951
Int. Cl.[2] G11B *5/52, 15/60, 23/04*
U.S. Cl. 360—85 **14 Claims**



1. Magnetic tape transducing apparatus comprising in combination with a magazine containing magnetic tape, supply means for said tape and means for guiding a free length of said tape from said supply means,

a support including means for receiving and predeterminately positioning said magazine on said support,

take-up means for said tape,

magnetic transducing means,

rotatable drum means having an elongated cylindrical surface rotatably supported by said support and supporting said transducing means with the operating end of said transducing means disposed at the cylindrical surface of said rotatable drum means,

concave arcuate surface means supported by said magazine for cooperating with said cylindrical surface of said rotatable drum means whereby the transducing means supported by said rotatable drum means may scan said tape,

power means for rotating said rotatable drum means,

means for driving said tape from said supply means to said take-up means while said tape is engaged against said cylindrical surface by said concave arcuate surface means and while said rotatable means rotates to cause said transducing means to transversely scan said tape and to permit said transducing means to transduce signals with respect to said tape.

4,213,163

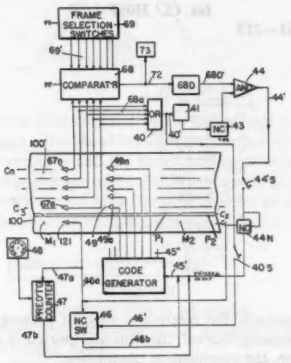
VIDEO-TAPE RECORDING

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 668,348, Jun. 27, 1957, Pat. No. 3,051,777. This application Aug. 27, 1962, Ser. No. 225,173

Int. Cl.[2] H04N *5/78*

U.S. Cl. 360—35 **25 Claims**



1. A method for recording a series of discontinuous images in spaced relationship along a continuous magnetic tape so as to produce a signal-bearing tape adapted to be played continuously and thereby provide a sequential display of said images and produce the illusion of animation, comprising: providing a first image showing an arrangement at a first instant in time; scanning said first image with a scanner to produce a recordable signal at a recording head; relatively moving said tape and recording head along the axis of length of the tape during the scanning operation at a rate of movement proportional to the rate of tape movement during playback and recording the signal on the tape until the image is scanned and recorded on a first portion of the tape; stopping said relative movement; and then providing second and successive images representing the appearance of said arrangement at later, discrete and discontinuous second and successive instants in time, and re-establishing said relative movement and repeating the scanning and recording processes on second and successive portions of the tape spaced from said first portion for each of said second and successive images so as to produce a sequence of adjacent magnetically reproducible representations of said images on said tape, whereby upon playback of the tape, the images are visually reproducible at evenly spaced intervals of time to produce an animated sequence of visible images.

4,213,164

ELECTRONIC PROTECTION CIRCUIT INCORPORATING VOLTAGE DIVIDER SENSING, GATING AND TRIGGERING

Robert F. Gaertner, San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Jun. 14, 1978, Ser. No. 915,395

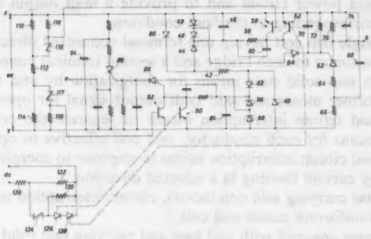
Int. Cl.[2] H02H *3/20*

U.S. Cl. 361—56 **9 Claims**

1. An electronic protection circuit for providing a trigger to a circuit to be protected in the presence of an ac source voltage exceeding a predetermined amplitude, comprising

charge storage means responsive to storing a charge from a first polarity of an applied ac voltage,

switch means connected to the ac source operably switched on when the first polarity of the ac source exceeds a



predetermined amplitude for a predetermined length of time, and

gated semiconductor means connected to said charge storage means and to said switch means, switching on of said switch means gating on said gated semiconductor means to permit the charge stored on said charge storage means to be applied therethrough as an outgoing trigger.

4,213,165

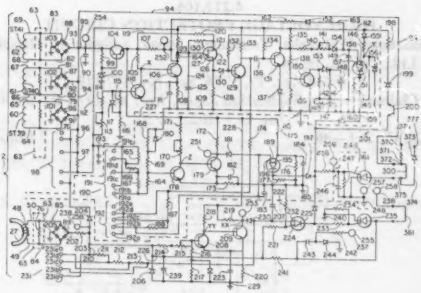
CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

Henry J. Zylstra, Alburnette, and Harley W. Jansen, Marion, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Mar. 16, 1978, Ser. No. 887,109

Int. Cl.[2] H02H *3/08*

U.S. Cl. 361—94 **2 Claims**



1. A circuit protective device to detect fault conditions in an electrical power circuit having a plurality of conductors and protect said power circuit against such fault conditions, including:

separable contact means for each conductor,

circuit interruption means operable to separate said contact means and interrupt said power circuit on occurrence of a fault condition,

manually operable means for operating said interruption means to separate the contact means for each conductor to interrupt said power circuit,

transformer means associated with each conductor, each transformer means including a current transformer for each conductor supplying a respective step up transformer having a respective rectifier bridge connected to the output of the respective step up transformer secondary with the output of each bridge connected in common to

provide a D.C. output signal proportional to the current in said conductors and to supply power,

solid state interruption initiating means energized by the power supplied from the bridges and controlled by the D.C. signal in response to the development of a respective predetermined current in any one of said conductors to detect the occurrence of a respective fault condition in said power circuit and to provide a fault output signal corresponding to the fault condition,

a single trip coil having one terminal connected directly in common to each bridge and a second terminal connected to said solid state means for energization by said transformer means and said fault output signal for operating said circuit interruption means to separate the contact means for each conductor, said coil effective to operate said circuit interruption means in response to energization by current flowing in a selected direction,

a base carrying said conductors, circuit interruption means, transformer means and coil,

a cover engaged with said base and carrying said solid state means,

a pair of terminal positions on said cover accessible from the exterior of said cover,

means interconnecting said second terminal of said coil with said solid state means in response to the engagement of said cover with said base and connecting each of said coil terminals to a respective terminal position on said cover accessible from the exterior of said cover for connection to a power source remote from said cover and base to enable energization of said coil from a remote location and operation of said circuit interruption means to initiate interruption of said power circuit independently of said solid state means and transformer means,

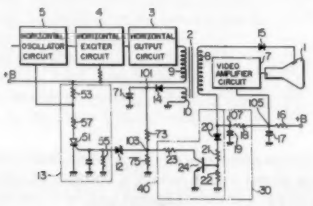
and last means connected between a selected terminal position and said coil for ensuring the energization of said coil from said remote location by current flowing in said selected direction.

4,213,166

HIGH VOLTAGE PROTECTION CIRCUIT

Masanobu Watanabe, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1978, Ser. No. 897,119
Claims priority, application Japan, Apr. 18, 1977, 52-43570
Int. Cl.[2] H02H *3/20*
U.S. Cl. 361—86 **7 Claims**



1. In a high voltage protection circuit for a television receiver including a picture tube, comprising:

(a) periodic pulse generating means for generating a periodic pulse;

(b) boost means for boosting said periodic pulse and for producing a D.C. high voltage for said picture tube from the thus boosted periodic pulse;

(c) stopping means having an input terminal for rendering said picture tube inoperative to stop the radiation of harmful X-rays when a control voltage supplied to said input terminal exceeds a predetermined voltage;

(d) rectifying means for rectifying said periodic pulse; and

(e) supply means connected to said rectifying means for smoothing the rectified periodic pulse to produce the D.C. control voltage and for supplying said D.C. control voltage to said input terminal:

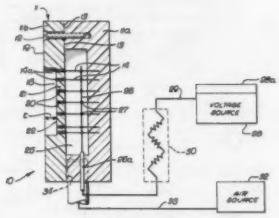
the improvement comprising control means connected between said supply means and a beam current path of said picture tube through which a beam current of said picture tube flows for operatingly reducing said D.C. control voltage supplied to said input terminal when said beam current is less than a predetermined value, a reduced amount of said D.C. control voltage increasing in accordance with decrement in said beam current.

4,213,167

PLANAR GAS AND ION DISTRIBUTION

James M. Cumming, 4571 Comber Ave., Encino, Calif. 91316, and Donald G. Saurenman, 6787 Worsham Dr., Whittier, Calif. 90602

Filed Mar. 31, 1978, Ser. No. 892,140
Int. Cl.[2] H05F *3/00*
U.S. Cl. 361—213 **1 Claim**



1. In apparatus for treating a strip of photographic film during processing thereof, the film transported in a longitudinal direction, the combination comprising

(a) a carrier body, including a first body block section defining a first transversely elongated recess, and a second body block section overlying said recess and defining a second transversely elongated recess parallel to and overlying the first recess, there being a wall separating said two recesses, and closing the first recess, the second recess being laterally open along its entire length,

(b) needles entirely supported by said first body section, the needles having tips defining a plane toward and through which the film is adapted to pass, the needles having wire configuration,

(c) said wall defining orifices within which the respective needles project, the orifices communicating between said recesses, the orifices spaced lengthwise of said recesses, said tips located at said walls,

(d) means for supplying pressurized gas to said orifices via said first recess and at pressure in excess of about 25 psi to produce gas jets which sweep over said tips and treat both sides of the film, said jets directed generally laterally relative to said longitudinal direction of film transport,

(e) and means for supplying voltage to said tips via said needles at a level or levels to effect production of ions distributed laterally with the gas jets for neutralizing static on both sides of the film passing through said plane, said means including a bus wire extending in said first recess and electrically connected to said needles.

4,213,168

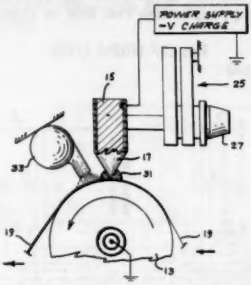
ELECTRET CHARGE TECHNIQUE

Matthew G. Garbett, Los Altos Hills, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 20, 1978, Ser. No. 926,360
Int. Cl.[2] B05C *1/04*
U.S. Cl. 361—225 **4 Claims**

1. An electret charging apparatus for electrostatically charg-

ing dielectric tapes to a high level charge density comprising, a motor driven capstan having a dielectric tape positioned thereover for movement therewith, a sponge assembly positioned above said tape in close proximity thereto, the lower portion of said sponge being substantially conical in configuration, said sponge assembly being charged by a high DC voltage, a dielectric fluid disposed within said sponge in sufficient amount to form a fluid bead between the lowermost portion of said sponge assembly and the upper surface of said dielectric tape through a process of electrophoresis such that the tape becomes evenly wetted with the fluid mixture as the capstan with the tape thereover rotates and passes under the sponge assembly.

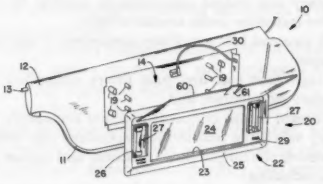


4,213,169

COVERED VISOR MIRROR

Gordon B. Kempkers, Hamilton, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Nov. 9, 1978, Ser. No. 958,968
Int. Cl.² B60Q *1/00*
U.S. Cl. 362—74 **23 Claims**



1. A body and cover member including hinge means pivotally attaching the cover to the body, said hinge means comprising:

elongated socket means on one of said body or cover for receiving a pintle, said socket means including a longitudinally extending arcuate interior surface extending around a substantial portion of the interior of said socket, said socket further including a camming surface angularly spaced from said arcuate surface within said socket and detent means formed at the junction of said camming surface and said arcuate surface; and

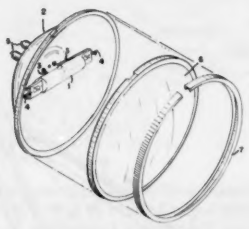
pintle means on the other of said body or cover for fitting in said socket, said pintle means including a curvilinear surface mating with the arcuate surface of said socket and a camming surface angularly spaced from said curvilinear surface and cooperating with said camming surface and detent means of said socket as said cover is rotated about the axis of said pintle for urging said cover to a predetermined position in which said camming surface of said pintle engages said detent means for holding said cover in said predetermined position.

4,213,170

REFLECTOR LAMP WITH LENS HAVING LIGHT-MODIFYING COATING

Stephen F. Kimball, Andover, and Roy C. Martin, Salem, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 6, 1978, Ser. No. 875,287
Int. Cl.² F21V *29/00*
U.S. Cl. 362—267 **1 Claim**



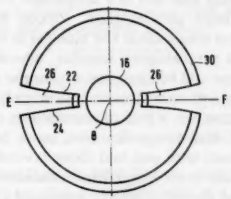
1. An electric lamp comprising: a curved reflector having a circular front and a peripheral edge thereat; a double ended tungsten halogen lamp disposed within the curved reflector; and a circular lens, having a light-modifying coating on the inner surface thereof and having a peripheral edge, fastened to the circular front of the reflector by means of a split metal ring that encircles said edges of the reflector and lens and clamps them together, said split metal ring being essentially U shaped and bent into a circle, one leg of the U bearing against the back of the peripheral edge of the reflector and the other leg of the U bearing against the front of the peripheral edge of the lens.

4,213,171

LIGHTING FIXTURE WITH SIDE ESCAPE WINDOW

Knut O. Sassmannshausen, Wexford, Ireland

Filed Jun. 21, 1977, Ser. No. 808,726
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628243; Oct. 18, 1976, 2646930; Austria, Jan. 31, 1977, 11586/77; Ireland, Apr. 29, 1977, 865/77
Int. Cl.² F21V *7/00*
U.S. Cl. 362—310 **50 Claims**



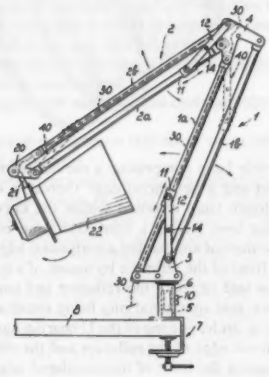
1. Lighting fixture comprising an enclosure, means disposed in said enclosure for supplying a central source of light therein, a concave reflector for directing a main beam of light out of said enclosure from said source generally along a given optical axis, said concave collector having a light-penetrable region thereof disposed at least at one side of said optical axis in a common horizontal plane with said central light source and forming an escape window for part of the light from said source out of said enclosure.

4,213,172

MOVABLE STAND, PARTICULARLY FOR LAMPHOLDERS AND LAMP CARRIER THEREON

Antonio Scattolin, Via Sardegna, 45, and Sergio Bernardi, Via B. Verro, 17/A, both of Milan, Italy

Filed Feb. 16, 1978, Ser. No. 878,549
Claims priority, application Italy, Jul. 29, 1977, 21939/77[U]
Int. Cl.[2] F21S 1/12; F29V 29/00; F21V 21/00, 21/18
U.S. Cl. 362—413 6 Claims



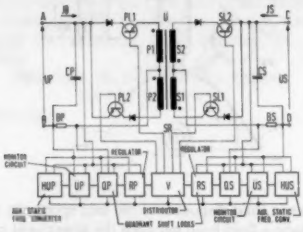
1. A movable stand particularly for lampholders and other objects, comprising a supporting base defining a main axis of the stand, at least one articulated parallelogram member of elongated extension, including a first and a second articulated elongated rod members parallel and laterally spaced with respect to each other and a first and a second articulated link members pivotally connecting said first and said second elongated rod members at opposite ends thereof to form said articulated parallelogram, said articulated parallelogram member being associated with one said link members thereof selectively to said supporting base and to a lampholder or the like and to another articulated parallelogram, friction means acting at least on said first longitudinal rod member in order to balance said articulated parallelogram member, wherein according to the improvement said friction means comprise at least one pair of shoes arranged to clamp therebetween in a frictional manner said first rod member, a pair of coextensive, laterally spaced apart resilient, leaf-spring like bars, each having one end thereof connected with one said shoes pivotally about a first axis perpendicular to the longitudinal extension of said first rod and another end thereof pivotally connected to a point of said articulated parallelogram remote from said first rod member, the pivotal connection being about a second axis parallel to said first axis, an adjustable tie member extending transverse to said leaf-spring like bars and connecting one intermediate point of one said leaf-spring like bars with another intermediate point of another said leaf-spring like bars, said tie member having screw means for adjusting the mutual distance between said leaf-spring like bars thereby to regulate the resilient pressing and friction action thereof on said shoes and thereby against said first rod member frictionally clamped between said shoes.

4,213,173

POLARITY-AND-LOAD INDEPENDENT CIRCUIT ARRANGEMENT FOR CONVERTING ELECTRICAL ENERGY

Klaus Link, Munich, and Werner Lochter, Emmering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 911,719
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728377
Int. Cl.[2] H02M 5/293
U.S. Cl. 363—163 22 Claims



1. A circuit arrangement for converting electrical energy with the air of a static-frequency converter which operates at a higher frequency than the frequency to be produced, comprising:

a static frequency converter including a primary side winding means and a secondary side winding means;

a plurality of rectifiers and a plurality of heavy-duty switching transistors, said rectifiers connected in series with a respective switching transistor and a respective transformer winding means and poled for a respective current direction;

a primary side input connected to two of the rectifier-transistor series combinations;

a secondary side output connected to another two of the rectifier-transistor series combinations;

first high pass and low pass filters connected to said primary side input;

second high pass and low pass filters connected to said secondary side output; and

master control means connected to said transistors, to said primary side input and to said secondary side output for determining the output flow direction, said master control means including

first and second regulating circuits connected to said input and output, respectively, and operable to provide regulation of the output voltage independently of the input voltage and load changes,

first and second quadrant shift locks connected to said input and output, respectively, for providing output signals indicative of input and output current and voltage directions,

first and second auxiliary frequency converters connected to said input and output, respectively, for deriving operating voltages for said circuit arrangement,

first and second voltage monitoring circuits connected to said input and output, respectively, and to the respective regulating circuits and quadrant shift locks and operable to indicate the input and output polarities,

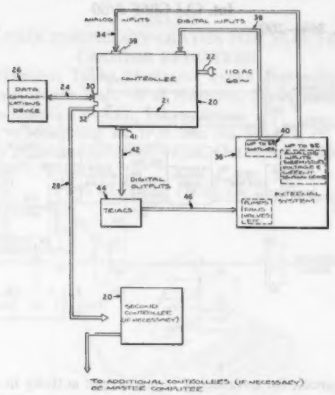
a distributor circuit connected to said plurality of transistors and connected in circuit with said auxiliary frequency converters, said quadrant shift locks, said monitoring circuits and said regulating circuits, and operable in response to the outputs of said monitoring circuits, said regulating circuits and said quadrant shift locks to selectively operate said transistors and determine the output flow direction.

4,213,174

PROGRAMMABLE SEQUENCE CONTROLLER WITH DRUM EMULATION AND IMPROVED POWER-DOWN POWER-UP CIRCUITRY

Richard E. Morley, Mason; Michael A. Bromberg, Nashua, and William A. Taylor, Campton, all of N.H., assignors to Andover Controls Corporation, Andover, Mass.

Filed May 31, 1977, Ser. No. 802,261
Int. Cl.[2] G06F *15/46, 9/00;* G05B *11/32*
U.S. Cl. 364—104 57 Claims



44. A programmable sequence controller for the control of at least one external device or system, the device or system generating inputs to the controller and the controller generating output driver signals for driving said device or system, said controller comprising:

(A) input circuitry communicating with the inputs from the external device or system, and responsive thereto, for generating signals of selected inputs;

(B) output driver circuitry, interconnected to the device or system for generating output driver signals; and

(C) a central processing unit communicating with the input circuitry and output driver circuitry, said central processing unit programmed to execute a control program representing the desired state of the output driver signals in relationship to the state of selected inputs from the external device or system, generated by the input circuitry, said control program comprising a plurality of addressable drum lines defining a simulated sequence drum, each drum line defining selected output driver signals as being as selected states and said drum line able to specify at least two sets of exit conditions, each set of exit conditions specifying a drum line to be next executed by the controller, the sets of exit conditions specifying the states of specified inputs from the external device or system and specified output driver signals, the central processing unit further programmed to execute one of the drum lines during scan of the simulated sequence drum, and to examine the sets of exit conditions of the executed drum line so as to next execute a drum line specified by a set of exit conditions if these exit conditions are satisfied;

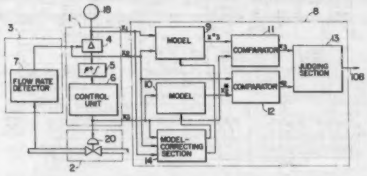
whereby the controller executes one line of at least two specifiable different lines of said drum if one of the sets of exit conditions for the presently executed line is satisfied and thereby providing for branching capability.

4,213,175

FAULT-DETECTING APPARATUS FOR CONTROLS

Nobuo Kurihara, Hitachiota, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,074
Claims priority, application Japan, Jul. 4, 1977, 52-79122
Int. Cl.[2] G05B *17/00, 13/02;* G06F *15/46*
U.S. Cl. 364—119 7 Claims



1. In a fault-detecting apparatus (8) for a closed-loop control system (1, 2 and 3) having an object for fault detection which makes up part of said control system, said apparatus being supplied with digital signals obtained by sampling input and output of said object with a fixed periodic time, and detecting an abnormal state of said object on the basis of said digital signals so as to notify the occurrence of said abnormal state, said apparatus (8) comprising:

mathematical model means (B4-B10) simulating an input-output characteristic of said object included in said control system (1, 2 and 3), said model means being supplied with the digital signals corresponding to the input of said object with every sampling, and generating the digital signals corresponding to the output of said object;

first means (B11-B15) for comparing the output of said model means with the output of said object with every sampling, and for detecting an abnormal state of said object so as to notify the occurrence of the abnormal state;

second means (B17-B30) for receiving time-series digital signals relating to one of input and output of said object for a predetermined period when the presence of a model correction signal is confirmed, for determining an average value of said time-series digital signals received during the predetermined period, and for generating a signal corresponding to the degree of the deviation of said time-series digital signals from said average value;

third means (B31) for determining whether or not the correction of the characteristic of said model means is possible, on the basis of said signal corresponding to the degree of the deviation;

fourth means (B33-B45) for correcting the characteristic of said model means on the basis of said time-series digital signal received during the same period as said predetermined period of said second means when said third means decides that the correction is possible,

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4,213,176

SYSTEM AND METHOD FOR INCREASING THE OUTPUT DATA THROUGHPUT OF A COMPUTER

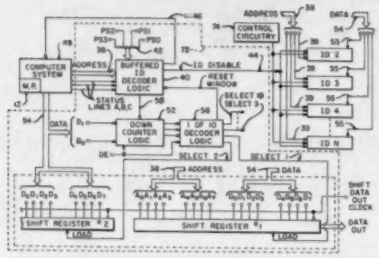
Paul J. Cooper, Acton, Mass., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 22, 1976, Ser. No. 753,398
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 14 Claims

1. A method of increasing the output from an n bit processor to a plurality of utilization devices wherein said processor is interconnected to said utilization devices by n data lines and m address lines wherein n and m are whole integers, comprising the steps of:

(a) forming data words having a length equal to n plus m data bits for data to be transferred to a selected one of said utilization devices and determining a count of said data words to be transferred;

(b) selecting said utilization device which is to receive said data words and disabling the remaining non-selected utilization devices for a predetermined time interval;
(c) entering said count on a counter means;



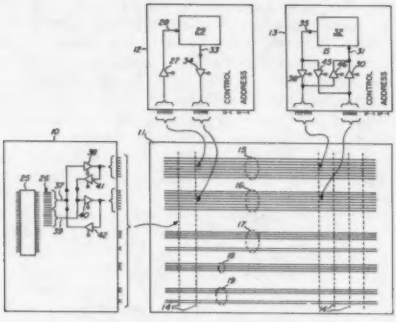
(d) transferring said data words over said n data lines and m address lines during said predetermined time interval; and
(e) ending said predetermined time interval when said count of data words to be transferred has been transferred to said selected utilization device.

4,213,177

EIGHT BIT STANDARD CONNECTOR BUS FOR SIXTEEN BIT MICROCOMPUTER USING MIRRORED MEMORY BOARDS

Robert W. Schmidt, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 24, 1978, Ser. No. 898,735
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 **9 Claims**



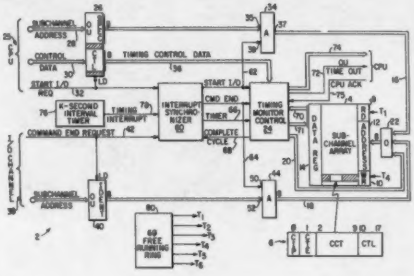
1. A microcomputer comprising: a processor board containing a microprocessor having sixteen-bit bidirectional data terminals; at least two memory boards each containing separate eight-bit unidirectional Data In and Data Out lines, each memory board containing a memory array with an input and an output and unidirectional coupling means connecting the array to the Data In lines and to the Data Out lines to transfer data to and from the array; a connector board containing a standardized bus with a plurality of plug-in connectors to receive the processor board and memory boards, the connector board having separate eight-bit Data In and Data Out lines for connection to said lines on the memory boards; said unidirectional coupling means on the memory board connecting the eight-bit Data In and Data Out lines to the input and output, respectively, of the memory array on both of the memory boards, said unidirectional coupling means selectively connecting the eight-bit Data In and Data Out lines to the output and input, respectively, of the memory array on one of said memory boards whereby coupling is in opposite directions on said one of the memory boards relative to the other; and connecting means in the processor board to connect the sixteen-bit bidirectional data terminals to the two separate eight-bit Data In and Data Out lines of the connector board, said microprocessor including means for simultaneously receiving sixteen bits to or from said memory arrays by utilizing said Data In and Data Out lines as a sixteen-bit bidirectional bus.

4,213,178

INPUT/OUTPUT COMMAND TIMING MECHANISM

Mark F. Diez; David O. Lewis, and Thomas S. Robinson, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,672
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 **4 Claims**



1. A circuit for overseeing input/output activity in a digital computing system comprising a processing unit, digital storage, and a plurality of input/output operation units, the input-/output operation units being connected to an input/output channel bus for communication with the processing unit and storage, the circuit comprising:
(a) a memory array having a plurality of storage locations capable of storing a plurality of subchannel status words, each subchannel status word corresponding to an input-/output operation unit and encoding control information for an input/output operation by the input/output operation unit, each subchannel status word having a timing monitor field including a current-count subfield, a count-limit subfield, and a command-in-progress subfield;
(b) load-timing-control-data circuit means connected to the central-processing unit and to the memory array for loading subchannel status words selected by the central processing unit with timing control data in response to control signals from the central processing unit, the count-limit subfield being loaded with data from the central processing unit encoding a count-limit number, the command-in-progress bit position being set to a state indicating that an input/output operation had been requested of the corresponding input/output operation unit, and the current-count subfield being cleared to a state encoding the number zero;
(c) an interval timer for emitting clock signals at timed intervals;
(d) count-incrementer circuit means connected to the interval timer and to the memory array for repetitively incrementing numbers encoded in the current-count subfields of subchannel status words for which the command-in-progress subfield indicates that an input/output operation has been requested, the repetitive incrementing being carried out in response to clock signals from the interval timer so that the number encoded in the current-count subfield of a particular subchannel status word measures the approximate time from the most recent request to the corresponding input/output operation unit for an input-/output operation;
(e) comparator-search circuit means for testing each sub-

channel status word for which the command-in-progress bit position indicates an input/output operation request has been made by comparing the number encoded in the current-count subfield with the number encoded in the count-limit subfield and for generating a response overdue signal if the count limit has been exceeded; and

(f) command-end circuit means connected to the input/output channel bus and to the memory array for accessing subchannel status words identified over the input/output channel bus to clear the command-in-progress subfield to a state indicating that the request for an input/output operation has been satisfied.

4,213,179

DATA PROCESSING APPARATUS FOR ELECTRONIC CASHIER REGISTERS

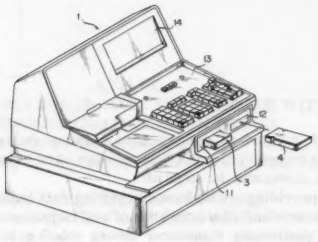
Koichi Hamano; Takao Morimoto; Junko Watanabe; Kaoru Ono, and Norio Yagi, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,591

Claims priority, application Japan, Oct. 8, 1977, 52-121101; Oct. 8, 1977, 52-121104

Int. Cl.² G06F *15/02, 15/20*

U.S. Cl. 364—405 **6 Claims**



1. A data processing apparatus for an electronic cash register comprising:

a keyboard including a plurality of entry keys, a store key and a plurality of keys for sales information selection;

printing means;

memory means;

at least one memory pack for storing sales information;

at least one interface circuit with which said memory pack for storing sales information is mechanically, electrically and removably coupled; and

a data processing unit coupled to said keyboard, printing means and memory means, and being responsive to the operation of at least one of the sales information selection keys and said store key of said keyboard to energize said memory pack, and to read out the sales information corresponding to the operated sales information key and write the readout sales information into said memory means and to then apply a command signal to said printing means to cause said printing means to print said sales information stored in said memory means.

4,213,180

CLOSED LOOP SENSOR CONDITION DETECTOR

Roman O. Marchak, Northville, and Douglas R. Verner, Orchard Lake, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,297

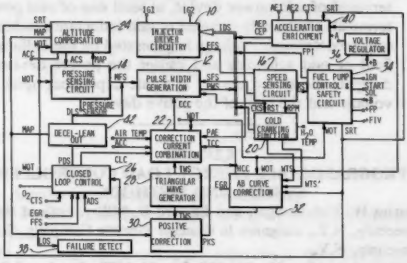
Int. Cl.² G06F *15/46;* F02M *7/00*

U.S. Cl. 364—431 **18 Claims**

1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine; said electronic control unit comprising:

open loop calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters, said open loop calibaration means regulating the air/fuel ratio by applying the sensed parameters to a schedule representative of the desired air/fuel ratio and generating an air/fuel ratio control signal therefrom;

closed loop calibration means for correcting said open loop calibration with a correction signal in response to the constituent composition of the exhaust gas of said internal combustion engine, said closed loop calibration means including an exhaust gas sensor for providing a bilevel voltage output where one voltage level indicates a rich



air/fuel ratio and the other voltage level indicates a lean air/fuel ratio; and

a failure indication means for sensing the failure of operation of the exhaust gas sensor and for providing a failure condition signal; said operational failure of the exhaust gas sensor being sensed by the lack of a transition between the output levels of the sensor during a delay time wherein said delay time is varied with at least one operating parameter of the internal combustion engine related to sensor operation.

4,213,181

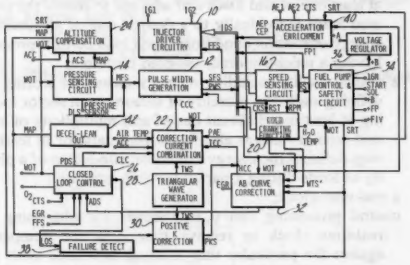
ENERGY DISSIPATION CIRCUIT FOR ELECTROMAGNETIC INJECTION

Ralph W. Carp; Robert E. Weber, and William R. Groff, all of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,732

Int. Cl.² F02M *51/00*

U.S. Cl. 364—431 **10 Claims**



1. An electronic fuel management system for regulating the air/fuel ratio of an internal combustion engine, said management system comprising:

computational circuit means for calculating a fuel pulse signal whose duration is dependent upon at least one operational parameter of the internal combustion engine;

injector driver means, responsive to said fuel pulse signal from the computational circuit means, for opening and closing a plurality of solenoid operated injector valves

with an injector driver signal having a leading and trailing edge; and

energy dissipation means for dissipating the energy stored in the inductance of said solenoids upon deenergization of the solenoids, wherein said energy dissipation speeds up one of the opening and closing of the valves at one of the leading and trailing edges of the injector driver signal, said energy dissipation means including:

an active power device, for dissipating said stored energy, whose conductance between its power terminals is controlled by a predetermined voltage connected to a control terminal of said power device, at least one of said power terminals electrically coupled to said inductance, wherein said predetermined voltage is generated by the collapsing field of said solenoids and causes the power device to dissipate the stored energy at a rate dependent upon the voltage and the gain of the active device.

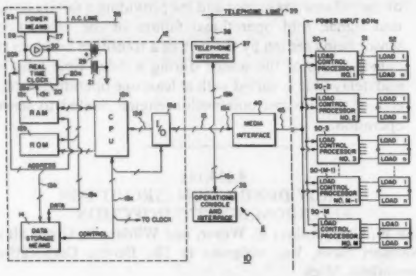
4,213,182
PROGRAMMABLE ENERGY LOAD CONTROLLER SYSTEM AND METHODS

Charles W. Eichelberger, and Edward B. Miller, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 871,989, Jan. 24, 1978, abandoned. This application Dec. 6, 1978, Ser. No. 966,816

Int. Cl.[2] G01R *21/00*; G06F *15/06*

U.S. Cl. 364—493 **43 Claims**



1. A system for programmably controlling the energy utilization condition of a multiplicity of loads, comprising:

a plurality of load control processors, each associated with at least one of said loads and adapted to enable the associated loads individually to a desired one of a plurality of energy utilization conditions, each load control processor having a unique address assigned thereto;

a central facility including memory means for storing data defining each of a plurality of sectors, each sector including at least one different one of said multiplicity of loads, said memory means also for storing data for at least one map defining the energy utilization conditions of a plurality of loads during a particular time interval;

a real-time clock;

central processing unit (CPU) means for addressing said real-time clock to receive time data for comparison against the particular time interval associated with each map stored in said memory means, said CPU means selecting that one of said maps to be currently enabled responsive to a favorable comparison of the time data and the map time interval; and

first means for transmitting data from said central facility to said plurality of load control processors;

said CPU means controlling said first means to sequentially transmit the unique address of a plurality of load control processors and data for causing each addressed load control processor to implement the energy utilization condition of loads coupled thereto in accordance with that one of said maps then required to be enabled responsive to the favorable time comparison.

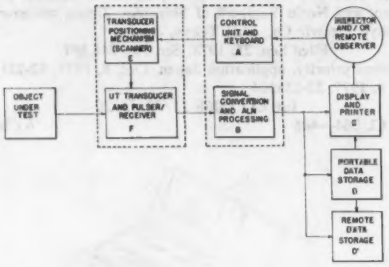
4,213,183
SYSTEM FOR NONDESTRUCTIVE EVALUATION OF MATERIAL FLAW CHARACTERISTICS

Roger L. Barron, Annandale, Va.; Anthony N. Mucciardi, Silver Spring, Md., and Claire L. Brown, Vienna, Va., assignors to Adaptronics, Inc., McLean, Va.

Continuation of Ser. No. 838,169, Sep. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 825,107, Aug. 16, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,753

Int. Cl.[2] G01N *29/04*

U.S. Cl. 364—507 **22 Claims**



1. A method of nondestructive testing and evaluation of signals representative of characteristics of an object under test, which comprises the steps of:

(a) providing a data base comprising data indicative of predetermined characteristics of said object under test,

(b) positioning transducer means relative to said object under test in response to data in said data base,

(c) receiving an energy waveform emanating from said object under test at said transducer means after said positioning,

(d) performing an analysis at selected points on said waveform to extract waveform features thereof,

(e) comparing the extracted waveform features of said analysis with said data base by a cluster test,

(f) classifying said waveform features from said comparison, and

(g) indicating the existence and parameters of said characteristics of said object under rest from said classifying.

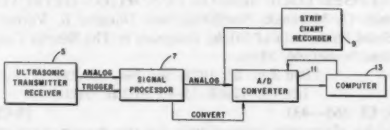
4,213,184
SIGNAL PROCESSOR FOR PROCESSING ULTRASONIC RECEIVER SIGNALS

George E. Fasching, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 10, 1978, Ser. No. 949,598

Int. Cl.[2] G06G *7/18*; G06J *1/00*

U.S. Cl. 364—574 **7 Claims**



1. A signal processor for processing the output signals from an ultrasonic receiver including an analog output signal and a reference trigger signal to reduce random noise contained in said signal relative to the desired useful signal, comprising:

means for repeatedly sampling said analog signal a selected number of sampling times in response to sample command signals applied thereto at each of a plurality of separate points in time of said analog singal relative to said reference trigger signal and temporarily holding the sample values;

an integrator connected to receive said sample values;

a recording means for separately recording the integral values of each of said plurality of separate points of sampling of said analog signal;

relay means for transferring integral values of said integrator to said recording means in response to a relay control signal; and

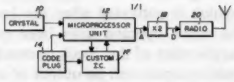
timing control means operable in response to said reference trigger signal for generating and applying said sample command signals to said sampling means and generating said relay control signal applied to said relay means each time the selected number of samples of said plurality of separate points of sampling of said analog signal is completed.

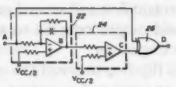
4,213,185

MICROPROCESSOR TONE SYNTHESIZER WITH REDUCED QUANTIZATION ERROR

David L. Muri, Lauderdale Lakes, and James T. Doyle, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 18, 1978, Ser. No. 943,037
Int. Cl.² G06F *1/02*; H03B *19/00*
U.S. Cl. 364—721 **4 Claims**





1. An encoder for use in communications apparatus and comprising in combination:

a stable signal source for supplying high frequency clock signals at a predetermined frequency;

a code source for supplying data signals representative of a predetermined set of tone codes;

synthesizer means coupled to the output of said stable signal source for receiving said clock signals, and coupled to the code source for receiving said tone code data signals and for providing first square wave signals at frequencies which are one-half of the frequencies called for by said tone codes;

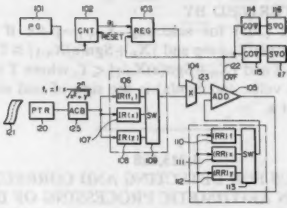
multiplier means coupled to an output of the synthesizer means and comprising integrator means for integrating the first square wave signals, zero crossing detector means coupled to the output of the integrator means, logic gating means coupled to receive the output signals of the detector means and the first square waves for providing second square wave signals at the frequencies called for by said tone codes.

4,213,186

PULSE INTERPOLATION SYSTEM

Kazuo Murata, and Terukazu Kito, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1978, Ser. No. 932,186
Claims priority, application Japan, Aug. 19, 1977, 52-98768
Int. Cl.² G06F *15/46*
U.S. Cl. 364—723 **5 Claims**



1. A pulse interpolation system comprising

(a) a pulse generator for providing reference instruction pulses,

(b) a counter for counting the pulses from the pulse generator,

(c) a register for storing the content of said counter and for resetting said counter to zero,

(d) a first register group for storing a predetermined value from a programmed instruction tape,

(e) a second register group for storing a temporary value,

(f) a multiplier for providing the product of the output of the first register group and the output of said register,

(g) an adder for obtaining the sum of the output of the second register group and the product of said multiplier and applying the remainder of the sum of the addition to said second register group with the integer part of the addition producing an output interpolation numeral,

(h) a converter for changing said interpolation numeral to interpolation pulses,

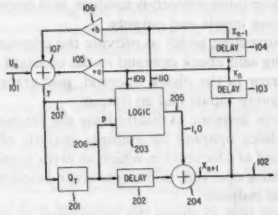
(i) means responsive to said converter for operating through an interpolation cycle.

4,213,187

DIGITAL FILTERS WITH CONTROL OF LIMIT CYCLES

Victor B. Lawrence, Matawan, and Debasis Mitra, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 14, 1978, Ser. No. 969,416
Int. Cl.² G06F *15/34, 7/48*
U.S. Cl. 364—724 **9 Claims**



1. A second order recursive digital filter adapted to receive an input signal U_n including

a quantizer (201) adapted to provide a fixed length output word p in response to an input word y, where $p<y<p+k$ and k is the quantizer step size;

means (103, 104) for providing once and twice delayed

versions (X_n and X_{n-1}, respectively) of the output X_{n+1} of said filter;

means (105, 106) for forming the products of said once and twice delayed versions with multiplier coefficients a and b, respectively;

means (107) for combining said products and said input signal U_n to generate said input word y; and

means (204) for selecting said filter output X_{n+1} as p or p+k,

CHARACTERIZED BY

logic means (203) for selecting $X_{n+1}=p+k$ if (1) $X_{n-1}>p+k$ or (2) $X_{n-1}=p$ and $|X_n+Sgn(a)X_{n-1}|\geqq T$ or (3) if $X_{n-1}=p+k$ and $|X_n+Sgn(a)X_{n-1}|<T$, where T is a fixed threshold value and Sgn(a) is the sign of said multiplier coefficient a.

4,213,188

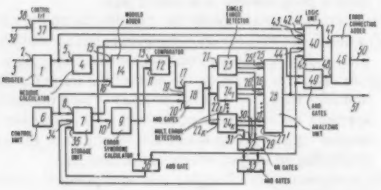
APPARATUS FOR DETECTING AND CORRECTING ERRORS IN ARITHMETIC PROCESSING OF DATA REPRESENTED IN THE NUMERICAL SYSTEM OF RESIDUAL CLASSES

Gennady G. Smolko, 103536, korpus 501, kv. 19; Izrail Y. Akushsky, Volokolamskoe shosse, 1, kv. 119, and Vladimir M. Burtsev, ulitsa 26 Bakinskikh Komissarov, 11, kv. 8, all of Moscow, U.S.S.R.

Filed Aug. 30, 1978, Ser. No. 937,930

Int. Cl.[2] G06F *11/10*

U.S. Cl. 364—739 **7 Claims**



1. An apparatus for detecting and correcting errors in the arithmetic processing of data represented in the numerical system of residual classes, wherein the result of each arithmetic operation is an operand under check (hereinafter called the check operand) comprised of the residues to the bases in the working range and of the real residue to a check base, said apparatus comprising:

first and second input buses;

a register to store said check operand having an input and outputs, said input being coupled to said first input bus;

a constant storage unit to store the constants to be added algebraically to said check operand so that possible errors occurring in it are corrected and to store the binary digits which determine erroneous residues, said constant storage unit having inputs and outputs;

an error correcting adder to provide the corrected operand by adding said check operand to the constant determined by an error in the check operand, said error correcting adder having inputs and an output;

a single error detector to discriminate the erroneous residue of the check operand by multiple analysis of the binary digit found at a location in which an error is assumed to be in the check operand, said single error detector having an input and outputs;

an analyzing unit to signal the occurrence of errors in the check operand, said analyzing unit having inputs and outputs, said first one of said outputs being coupled to a first output bus;

said apparatus further comprising:

a residue calculator to calculate the residue of the check operand to the check base with which the check operand is provided to allow for the detection of errors in it; an input and an output of said residue calculator, said input being coupled to said first output of said register;

an error syndrome calculator; an input and an output of said error syndrome calculator, said input being coupled to said first output of said constant storage unit;

a modulo adder to calculate the syndrome of the check operand by algebraically adding the real residue to the check base and the calculated residue to the check base of the check operand; inputs and an output of said modulo adder, said first one of said inputs being coupled to said output of said residue calculator, and said second input being coupled to said second output of said register;

a comparator responsive to the representations of the error syndrome and the syndrome of the check operand to determine whether or not an error takes place in the latter; inputs and an output of said comparator, said first one of said inputs being coupled to said outputs of said modulo adder, and said second input being coupled to said output of said error syndrome calculator;

first, second and third groups of AND gates each provided with inputs and an output;

a group of OR gates; inputs and and output of said group of OR gates;

k multiple error detectors to discriminate the erroneous residues of the check operand by multiple analysis of the binary digit found at the locations in which errors are assumed to be in the check operand depending on the error syndromes; an input and outputs of each of said multiple error detectors, said inputs being coupled with said input of said single error detector and coupled, via said first group of AND gates, to said output of said comparator, said first and second outputs of said single error detector and of said k multiple error detectors coupled to said inputs of said analyzing unit; said inputs of said group of OR gates coupled to said third outputs of said analyzing unit; said output of said group of OR gates coupled to said second input of said constant storage unit via said second group of AND gates;

a logic unit which is activated after the locations of the errors in the check operand have been established and allows the application of the check operand to said error correcting adder; inputs and an output of said logic unit; said first and second ones of said inputs coupled to said outputs of said register; said third and fourth inputs coupled to said first and second outputs of said analyzing unit; and said output coupled to said first input of said error correcting adder;

a control flip-flop to select the operating modes of the apparatus; an input and an output of said control flip-flop; said input coupled to said second input bus; said output coupled to said fifth input of said logic unit;

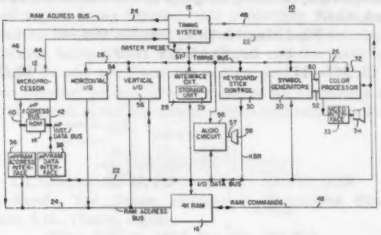
a control unit to control the operation of the means responsible for the correction of the erroneous operand; an output of said control unit; said output coupled to said first input of said constant storage unit and to said second input of said first group of AND gates; said third input of said first group of AND gates coupled to said second output of said constant storage unit; said third input of said constant storage unit coupled to said output of said third group of AND gates; said first input of said third group of AND gates coupled to said output of said modulo adder; said second input of said third group of AND gates coupled to said second output of said analyzing unit;

a fourth group of AND gates; inputs and an output of said fourth group of AND gates; said first input coupled to said output of said constant storage unit; said second input coupled to said second output of said analyzing unit; said output coupled to said second input of said error correcting adder; and said output of said error correcting adder coupled to a second output bus.

4,213,189
REACTIVE COMPUTER SYSTEM ADAPTIVE TO A PLURALITY OF PROGRAM INPUTS

David J. Mueller, Elk Grove Village; Daniel G. Prysby, Chicago; John V. Moravec, Berwyn, all of Ill., and George A. Watson, Tustin, Calif., assignors to Admiral Corporation, Schaumburg, Ill.

Filed Jun. 13, 1977, Ser. No. 806,304
Int. Cl.[2] G06F *3/00;* G06K *15/20*
U.S. Cl. 364—100 53 Claims



1. A data processing and display system for transferring data between said system and a data storage unit, the data storage unit storing a set of characters from which a plurality of composite images may be formed, image data identifying the arrangement of the characters to form a desired image, and color information identifying a palette of colors from which the characters may be colored, said system comprising:

(a) color display means for displaying images of a selected arrangement of characters chosen from the set and characters colored with selected colors from the palette;

(b) means for reading data from the data storage unit;

(c) addressable storage means coupled to said reading means for receiving therefrom and for storing data derived from the storage unit indicative of the set of characters and the palette of colors; and

(d) display control means for first addressing the image data in a first portion of said addressable storage means to obtain a first readout, and secondly for using the first readout data and being coupled to said color display means to receive data identifying the currently displayed image by said color display means for addressing a second portion of said storage means to obtain signals indicative of the character color then to be applied to and displayed by said color display means.

4,213,190
PROGRAMMED COPIER CONTROL

David E. Finlay, Boulder; Wayne E. Robbins, Longmont, and Terence Travis, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

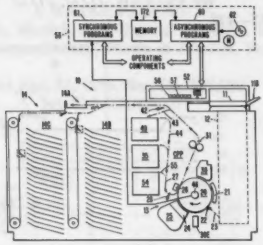
Filed Aug. 28, 1978, Ser. No. 937,396
Int. Cl.[2] G03G *15/00*
U.S. Cl. 364—900 9 Claims

1. A copy production machine having copy production means, image input means coupled to said copy production means for supplying images thereto, and output means for receiving copies produced by said copy producing portion, and control panel means for providing input parameters, characterized by;

programmed control means for controlling the machine and having a read/write memory means for storing status signals representative of machine copy producing states and programmed control states,

asynchronous means in said programmed control for periodically and asynchronously scanning machine states including machine operating states and control panel parameters, said asynchronous means including means in communication relations with said memory means for exchanging signals therewith representative of the machine states, and

synchronous means responsive to said copy production means for operating a predetermined portion of said machine in synchronism with said copy production means and including means in communication relationship with

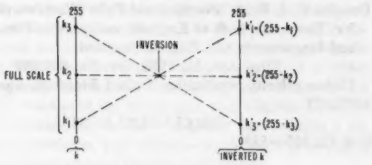


said memory means for exchanging data signals therewith whereby said asynchronous and synchronous means operate independently except for communication therebetween using said memory means wherein both said means exchange signals representative of the execution of the respective functions therein.

4,213,191
VARIABLE LENGTH DELAY LINE

Robert S. Gemp, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 774,726, Mar. 7, 1977, Pat. No. 4,131,936.
This application Mar. 16, 1978, Ser. No. 887,288
Int. Cl.[2] G11C *13/00*
U.S. Cl. 365—73 3 Claims



1. In a digital delay line apparatus including a delay line having a plurality of memory locations; and

means for addressing said memory locations in a write mode to store therein in a recirculated manner a digital signal and for addressing said memory locations in a read mode to retrieve the stored digital signal; the combination of:

free-running counter means for generating a first instantaneous count;

said addressing means being responsive to said first instantaneous count as a write address for said memory locations in the write mode for storing said digital signal; and

means responsive to said first instantaneous count and to a predetermined count for generating a second instantaneous count, said second instantaneous count differing from said first instantaneous count by said predetermined count;

said addressing means being responsive to said second instantaneous count as a read address for said memory locations in the read mode for retrieving said stored digital signal;

whereby said digital signal is retrieved with a delay equal to said predetermined count.

4,213,192

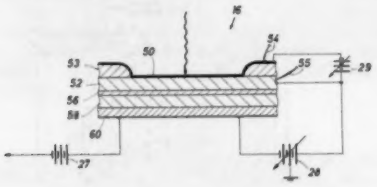
ELECTRON BEAM ACCESSED READ-WRITE-ERASE RANDOM ACCESS MEMORY

Alton O. Christensen, Sr., 3455 Homestead Rd. #47, Santa Clara, Calif. 95051

Continuation of Ser. No. 761,922, Jan. 24, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,501

Int. Cl.[2] G11C *11/21, 11/23*

U.S. Cl. 365—118 27 Claims



1. An electron beam storage apparatus comprising:

(a) an electron beam source which forms an electron beam directed toward a target;

(b) a target which is formed of a semiconductor into which the electron beam is directed forming ionized charged pairs therein, and further incorporating a dielectric adjacent to said semiconductor which dielectric stores charges therein from said adjacent semiconductor; and

(c) an accelerating voltage source connected to spaced terminals for applying an accelerating voltage for imparting energy to electrons of the electron beam sufficient to penetrate into said semiconductor, but which energy level is not sufficient to penetrate through said semiconductor to said dielectric layer.

4,213,193

HOLOGRAPHIC DATA STORAGE SYSTEMS

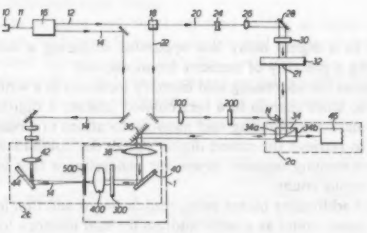
Douglas C. J. Reid, Moulton, and Peter Waterworth, Eastcote, Nr. Towcester, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,888

Claims priority, application United Kingdom, Apr. 23, 1977, 16973/77

Int. Cl.[2] G11C *13/04*

U.S. Cl. 365—125 8 Claims



1. A holographic data storage system for the storage and retrieval of data which includes in combination input means adapted to produce a number of coherent beams; optical means for converting data into holographic form for illuminating a storage medium, said storage medium being adapted to store a number of data tracks, and capable of movement in a plane perpendicular to the plane of incidence; stepping means which is adapted to direct the number of beams produced by the input means on to the storage medium in a manner whereby a number of data tracks are recorded or retrieved, and read out means capable of controllable selective retrieval of data, in which said optical means comprises a first path for generating at least one reference beam, in which the object beams are directed onto the storage medium with a wavefront having a curvature which is substantially different from the wavefront of the at least one reference beam, thereby allowing said holograms to be overlapped on said storage medium while being discriminatable on replay.

4,213,194

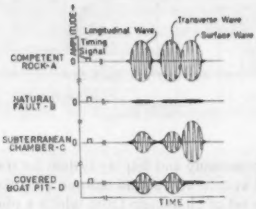
ACOUSTIC ARCHEOLOGICAL MAPPING METHOD

Eugene M. Spurlock, Menlo Park, Calif., and Carl W. Smith, Albuquerque, N. Mex., assignors to SRI International, Menlo Park, Calif.

Filed May 11, 1978, Ser. No. 904,748

Int. Cl.[2] G01V *1/20*

U.S. Cl. 367—14 10 Claims



8. In a method of near-surface underground acoustic mapping for locating surface faults and near-surface underground faults and voids, through which faults and voids substantially no acoustic wave energy is transmitted, the steps comprising,

generating pulse acoustic wave which include longitudinal, transverse and surface waves in rock at a transmitting site,

receiving at a plurality of receiving sites spaced from the transmitting site separately identifiable longitudinal, transverse and surface acoustic waves travelling near the surface of the earth from the transmitting site,

comparing the magnitude of separately identified transmitted longitudinal, transverse and surface acoustic waves received at the receiving sites, compensated for distance differences where said receiving sites are not equally spaced from the transmitting site, for identifying, and distinguishing between, surface faults and near-surface underground faults and voids.

4,213,195

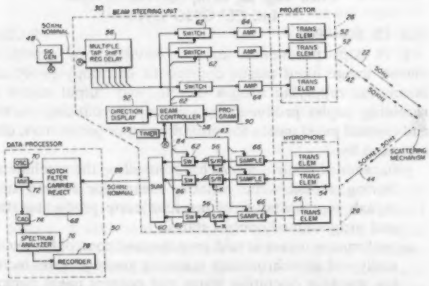
SONIC DIRECTION SYSTEM

Roger G. Pridham, Providence, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 12, 1976, Ser. No. 676,445

Int. Cl.[3] G01S *15/06*

U.S. Cl. 367—92 5 Claims



1. A system for measuring the direction of a source of radi-

ant energy in a non-linear medium propagative of such radiant energy comprising:

means for projecting a beam of said radiant energy in a direction opposite said source;

means for directing a receiving beam into said projected beam to receive radiant energy scattered back toward said directing means by scattering mechanisms within said non-linear medium, said medium inducing a non-linear interaction between said projected beam of radiant energy and energy radiated by said source;

means for inhibiting the coupling of radiant energy into said receiving beam from a region within said projected beam, said region being between said projecting means and a predetermined distance therefrom, said predetermined distance being longer than a virtual end-fire array produced by said non-linear interaction; and

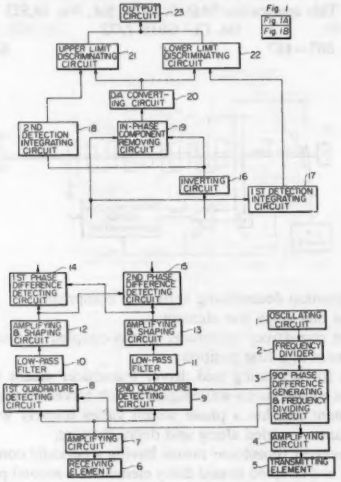
means coupled to said directing means for extracting data from signals of radiant energy within said receiving beam.

4,213,196

ULTRASONIC TYPE MOTION DETECTOR

Mikio Kondo, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 21, 1978, Ser. No. 879,593
Int. Cl.[2] G01D *21/04*
U.S. Cl. 367—94 **4 Claims**



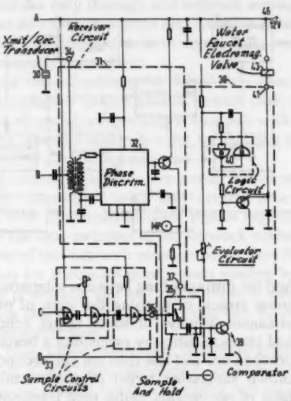
1. An ultrasonic type motion detector, wherein an ultrasonic wave is generated by a transmitting element driven with an output signal of an oscillating circuit which is frequency-divided by a frequency dividing circuit, an output signal of an element for receiving said generated ultrasonic wave is amplified by an amplifying circuit, the frequencies of the transmitted wave signal and the received wave signal are detected by a detecting section comprising a quadrature detecting circuit and phase difference detecting circuit for producing a pair of output signals, one of the pair of output signals only is inverted and combined with the other output signal to provide a standard voltage source, the respective output signals of the detecting section are each integrated in an integrating circuit to produce first and second threshold voltage signals which are respectively fed to a pair of comparators which are connected in parallel with each other and which have the output voltage signal of the standard voltage source connected thereto as input signals, to thereby produce an output signal when the output voltage signal of the standard voltage source does not lie between said first and second threshold voltage levels.

4,213,197

CIRCUIT ARRANGEMENT OF AN ULTRASONIC-PRESENCE MOTION DETECTOR, PARTICULARLY FOR A NON-CONTACT CONTROL OF A WATER FAUCET

Valentin Magori, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 895,950
Int. Cl.[2] G01S *9/66*
U.S. Cl. 367—94 **3 Claims**



1. In a circuit arrangement suitable for ultrasonic-presence motion detection to operate an electromechanical valve of a water faucet, and being of the type having an ultrasonic transducer as a transmitting transducer and as a receiving transducer, in which an oscillator produces an AC voltage for the transmitting transducer and a gate circuit is provided in order to chronologically control the feeding of wave trains of the oscillator AC voltage to the transducer, and wherein a receiving circuit is connected to the transducer and obtains a received signal therefrom, and wherein an evaluation circuit is provided, the improvement therein comprising:

means connected to said gate circuit and operable to produce a gate pulse to feed the oscillator AC voltage to the transducer for a period of time determined by the length of the gate pulse which defines the length of a distance range over which said circuit arrangement is responsive to motion;

a phase discriminator in the receiver circuit connected to said gate circuit to receive the oscillator AC voltage and connected to said transducer for receiving the respective received signal;

an electronic storage circuit including a sample and hold circuit connected to said phase discriminator for storing the output signal thereof at prescribably periodically recurring time points which are determined by read-out signals applied to said sample and hold circuit;

means connected to said sample and hold circuit for generating the read-out pulse signals; and

a comparator circuit in said evaluation circuit connected to said sample and hold circuit for comparing signal values stored by said sample and hold circuit, said comparator circuit having a threshold function and means operable to provide an output signal to the electromechanical valve of the water faucet indicative of the presence phenomenon in response to comparison in which the compared values

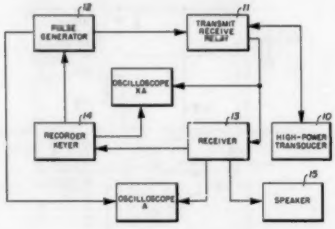
differ from one another by more than a predetermined value.

4,213,198

METHOD FOR CLASSIFICATION OF SONAR ECHOES

Louis R. Padberg, Jr., San Diego, Calif.; Frederick D. Parker, late of San Diego, Calif. (by Mrs. Frederick D. Parker, executrix); Carl L. Schaniel, Jr., San Diego, Calif., and Kenneth D. Kleager, La Mesa, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 20, 1955, Ser. No. 516,808
Int. Cl.[2] G01S *9/68*
U.S. Cl. 367—113 **5 Claims**



1. A method for distinguishing between submarine and non-submarine sonar targets comprising the steps of producing a series of permanent displays of sonar target echoes having fixed electrical characteristics by projecting a beam of energy pulses of more than one and less than ten milliseconds duration toward a known submarine target of predetermined range along a number of converging paths, then transmitting a succession of energy pulses of the same duration toward an unknown target along a number of converging paths, producing successive signals of durations which successively vary in accordance with the extent of said target along consecutive pulse paths, indicating the maximum and minimum signal duration, and gating a series of sonar echo displays responsive to the same electrical characteristics as those producing the permanent displays, of said unknown target between said maximum and minimum signal duration whereby a homologous echo production of the permanent displays is obtained only when echo is from said submarine type.

4,213,199

ACOUSTIC DATA LINK

Kenneth B. Labaw, Ridgecrest, Calif.; Gary Lowe, Prague, Okla., and Myren L. Iverson, Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1978, Ser. No. 944,118
Int. Cl.[2] H04B *11/00*
U.S. Cl. 367—117 **1 Claim**

1. An acoustic data communication link for a frame ship comprising:

a plurality of signal generators located at predetermined sites through said ship for generating predetermined signals characteristic of each site upon the ocurrence of a predetermined event at any of said sites;

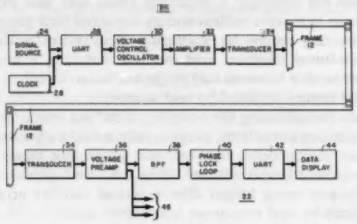
a psuedo-noise modulator connected to each signal generator for encoding said predetermined signals;

an emitting piezoelectric crystal transducer connected between each modulator and said frame for inputting said coded signals as physical vibrations in said frame;

a receiving piezoelectric crystal transducer at a predetermined location on said frame for receiving said physical vibrations and converting them back into said coded signals;

a bandpass filter connected to said receiving transducer for eliminating background noise not in the desired frequency range of said coded signal;

a pseudo-noise demodulator connected to said band pass



filter for decoding said filtered reconverted coded signal; and

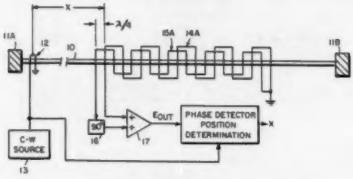
means for displaying said identified source connected to said demodulator.

4,213,200

POSITION DETERMINING DEVICES

Leslie E. Matson, Jr., Weston, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation of Ser. No. 851,886, Nov. 16, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,522
Int. Cl.[2] G01S *1/72*
U.S. Cl. 367—117 **6 Claims**



1. A position determining apparatus comprising

at least one delay line element;

at least one driver transducer means coupled to said delay element at a first position;

means for activating said driver transducer means to produce a continuous-wave signal which travels in said delay element and has a phase which varies linearly with the distance traveled along said delay element;

first receiver transducer means having a periodic configuration and coupled to said delay element at a second position to be determined relative to said driver transducer means, said first receiver transducer means detecting said continuous-wave signal at said first receiver transducer means and detecting a reflected continuous-wave signal at said first receiver transducer means, which reflected signal travels in said delay element and has a phase which varies linearly with distance traveled along said delay element, the detected continuous-wave output signal from said first receiver transducer means having a phase which varies non-linearly with distance along the delay element;

second receiver transducer means having a periodic configuration substantially the same as said first receiver transducer and coupled to said delay element at a third position which is displaced from said second position by a distance equal to g times $\lambda/4$ where λ is the wave length of the continuous-wave signal produced by said activated driver transducer means and g has a value which is between zero and about unity, said second receiver transducer means detecting said continuous-wave signal at said second receiver transducer means, the detected continuous-wave

output signal from said second receiver transducer means having a phase which varies non-linearly with distance along the delay element;

means responsive to the detected continuous-wave output signal from said second receiver transducer means for phase-shifting said detected signal by g times 90° to produce a phase-shifted, detected signal;

means for summing the detected continuous-wave output signal from said first receiver transducer means and the phase-shifted, detected output signal from said second receiver transducer means to produce a combined detected output signal, the phase of which varies linearly with distance along the delay element; and

means responsive to the phase of said combined detected output signal and to the phase of said activated continuous-wave signal at said driver transducer means for determining the position of said first receiver transducer means relative to said driver transducer means.

4,213,201

MODULAR TIME DIVISION SWITCHING SYSTEM

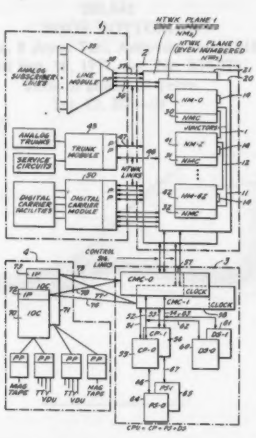
Real Gagnier, Hull; Ernst A. Munter; John B. Bourne, both of Ottawa; Ceasar Cesaratto, Alymer; Conrad W. Lewis, Ottawa; Brian T. Paley, Munster; Robert G. Wood, and John J. den Otter, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 28, 1978, Ser. No. 919,901

Claims priority, application Canada, Jun. 5, 1978, 304726

Int. Cl.[2] H04Q *11/04*

U.S. Cl. 370—62 **40 Claims**



1. In a time-division electronic communication switching system comprising a central processing unit, a network of time-switch containing network modules and an array of peripheral modules each serving for connecting a multiplicity of two-way communication channels with the switching system,

each peripheral module being connected by at least one time-division multiplex two-way link with, respectively, at least one network module of said network,

each network module having switches organized in at least one stage of incoming time-division switching and switches organized in at least one stage of outgoing time-division switching and having a peripheral side at which said multiplex two-way links are connected to switches of said incoming and outgoing switching stages and having a junctor side at which time-division multiplex junctors each interconnect switches respectively of said incoming and outgoing switching stages of said network modules,

said peripheral modules being constituted to provide time-multiplexed digitally coded bytes of communication traffic of said network modules for passage through time-switched connections and to receive such bytes from said network modules after passage through time-switched connections,

said switching system having the improvement which consists in that:

each said network module has a network message controller, each of which is connected through a two-way control signal link with said central processing unit and is capable of recognizing at least some defective received messages as being defective, of commanding a repetition of a message recognized as defective when first received and of repeating the sending of a message in response to an indication that it was defectively received;

said central processing unit is connected so that it exchanges signals, including system control signals, with said peripheral modules only through said network message controllers, and also so as to control said switches of said network modules through said control signal links and said network message controllers;

at least one time-division serial digital data channel in each of said multiplex links connects, in each case, the control circuits of one of said peripheral modules with one of said network message controllers for exchanging signals with said central processing unit, and

each said control signal link connecting one of said network message controllers with said central processing unit serves both for transmission of signals regarding the setting of the time-switches of the network module of which said one of said network message controllers forms a part, and also for transmission of signals passing between said central processing unit and any of those of said peripheral modules that are connected to said one of said network message controllers.

20. In a time-division telephone switching system comprising duplicate central processing units, duplicate networks of time-switch-containing network modules and an array of peripheral modules each serving for connecting a multiplicity of two-way telephone channels with the switching system,

each peripheral module being connected by at least one time-division multiplex two-way network link with a network module of the other of said networks which is connected to the same peripheral module as said one network module of said one of said networks,

each network module having switches organized in at least one stage of outgoing time-division switching and switches organized in at least one stage of outgoing time-division switching and having a peripheral side at which said multiplex two-way links are connected to said switches of said incoming and outgoing switching stages and having a junctor side at which time-division multiplex junctors each interconnect switches respectively of said incoming and outgoing switching stages of the network modules,

at least some peripheral modules having means for encoding speech signals into successions of PCM codes speech samples, for decoding PCM speech sample successions into speech signals, and for time-multiplexing and demultiplexing PCM speech sample successions, so that all speech signals provided to network modules are in the form of PCM speech samples, said switching system having the improvement which consists in that: each network module has a network message controller each of which is connected through a two-way control signal link with each of said central processing units and is capable of recognizing at least some defective received messages as being defective, of commanding a repetition of a message recognized as defective when first received, and of repeating the sending of a message in response to an indication that it was defectively received;

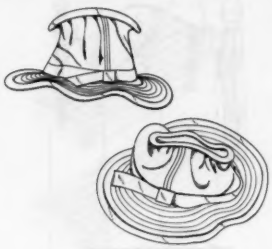
said central processing units are connected so that they can exchange signals, including system control signals, with said peripheral modules only through said network message controllers, and also so as to control said switches of

said network modules through said control signal links and said network message controllers;

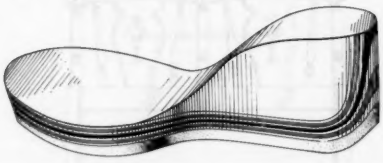
at least one time-division serial digital data channel in each of said time-division multiplex network links connects, in each case, the control circuits of one of said peripheral modules with one of said network message controllers for exchanging signals with one of said central processing units, and

each said control signal link connecting one of said network message controllers with one of said central processing units serves both for transmission of signals regarding the setting of the time-switches of the network module of which one of said network message controllers forms a part and also for transmission of signals passing between said one of said central processing units and any of those of said peripheral modules that are connected to said one of said network message controllers.

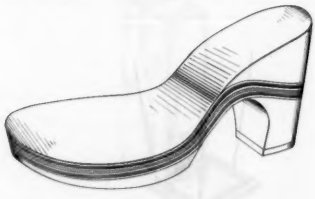
255,840
CRUSHABLE HAT
Patricia A. Day, 220 W. Seventh St., The Dalles, Oreg. 97058
Filed Dec. 22, 1978, Ser. No. 972,219
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—257



255,841
SHOE BOTTOM
Paul R. Goldman, 8 Joyce Ter., Andover, Mass. 01810
Filed Sep. 19, 1977, Ser. No. 834,371
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

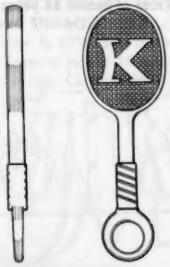


255,842
SHOE BOTTOM
Paul R. Goldman, 8 Joyce Ter., Andover, Mass. 01810
Filed Sep. 19, 1977, Ser. No. 834,383
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

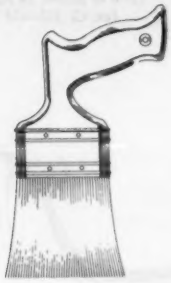


255,843
SHOE BOTTOM
Paul R. Goldman, 8 Joyce Ter., Andover, Mass. 01810
Filed Sep. 19, 1977, Ser. No. 834,397
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

255,844
PULL FOR A ZIPPER SLIDE
Katsuhiko Otani, Tokyo, Japan, assignor to Kabushiki Kaisha Otani, Tokyo, Japan
Filed Dec. 8, 1978, Ser. No. 968,095
Claims priority, application Japan, Aug. 21, 1978, 53-35316
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—415

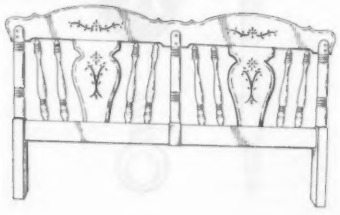


255,845
PISTOL GRIP BRUSH
Edward A. Wood, 41 Brougham St., New Plymouth, New Zealand
Filed Aug. 31, 1978, Ser. No. 938,535
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38

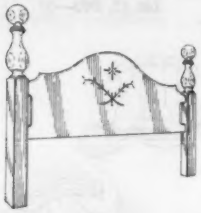


255,846
CHAIR
Michael A. Bick, Manhattan Beach, Calif., assignor to Shelly & Anderson Furniture Mfg. Co., Inc., Compton, Calif.
Filed Feb. 3, 1978, Ser. No. 874,820
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

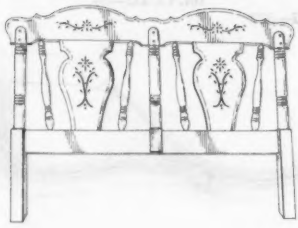
255,847
BED HEADBOARD
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,209
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



255,848
BED HEADBOARD
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,210
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79

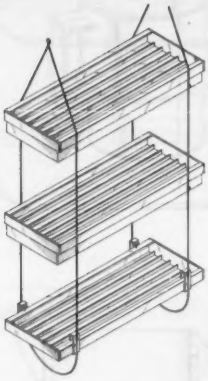


255,849
BED HEADBOARD
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,212
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



255,850
RECORD TURNTABLE SUPPORT STAND
Richard C. Meyer, 2757 Cormvey Ct., Marietta, Ga. 30062
Filed Apr. 24, 1978, Ser. No. 899,023
Term of patent 14 years
Int. Cl. D6—*06, 03*
U.S. Cl. D6—113

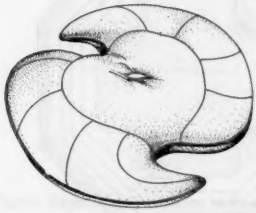
255,851
LIGHTED DISPLAY FIXTURE
Roy B. Crane, Wilmington, Mass., assignor to Keene Corporation, New York, N.Y.
Filed Apr. 26, 1978, Ser. No. 900,290
Term of patent 14 years
Int. Cl. D6—*04;* D26—*05;* D20—*02*
U.S. Cl. D6—113



255,852
DISPENSER FOR TEA BAGS AND THE LIKE
Wilfred J. Fogarty, 1236 Deerpark Dr., No. 70, Fullerton, Calif. 92631
Filed Jul. 13, 1978, Ser. No. 924,293
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130

255,853
FOOD PROCESSING TABLE
Philip L. Tome, Malta, Ohio, assignor to Taylor Woodcraft, Malta, Ohio
Continuation-in-part of Ser. No. 891,941, Mar. 30, 1978. This application Dec. 18, 1978, Ser. No. 970,371
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

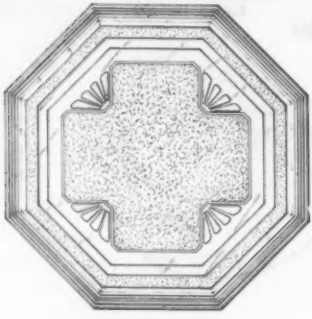
255,854
SWIRL PILLOW
Annette J. Gay, Phoenix, Ariz., assignor to Josephine C. Lijewski, a part interest
Filed Jun. 15, 1978, Ser. No. 915,954
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



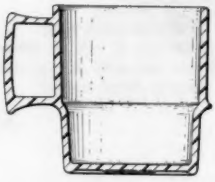
255,855
PICTURE FRAME
Rudolf A. Glogovcsan, 17701 Miranda St., Encino, Calif. 91316
Filed Nov. 6, 1978, Ser. No. 957,879
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—235

255,856
PICTURE FRAME OR THE LIKE
James E. Higson, Rte. 5, Box 526, Greenville, N.C. 27602
Filed Jul. 26, 1978, Ser. No. 928,255
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242

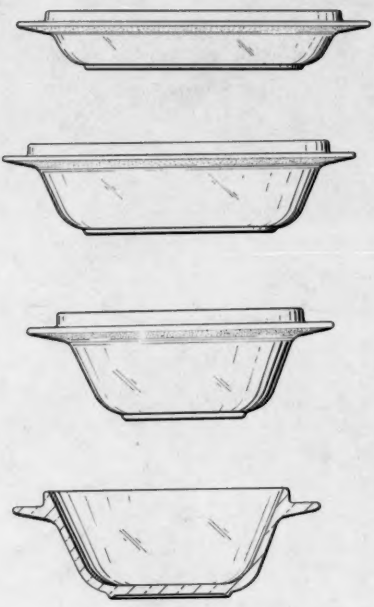
255,857
SERVING PLATE
Joerg Zimmermann, Uhingen, Fed. Rep. of Germany, assignor to Wurttenbergische Metallwaren Fabrik, Fed. Rep. of Germany
Filed Mar. 27, 1978, Ser. No. 890,228
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—1



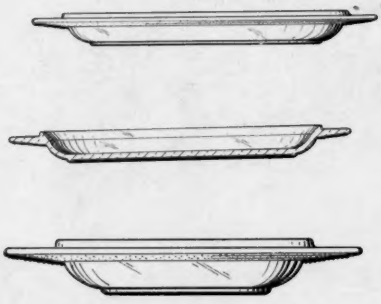
255,858
CUP OR THE LIKE
Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 26, 1976, Ser. No. 652,454
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9



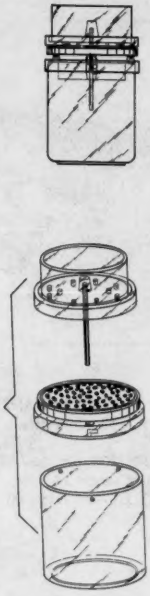
255,859
GLASS DISH
Allen J. Samuels, Ann Arbor, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 21, 1978, Ser. No. 935,446
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—28



255,860
GLASS PLATE
Allen J. Samuels, Ann Arbor, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 21, 1978, Ser. No. 935,448
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—28



255,861
CHEESE GRATER
Junior C. S. Hsu, 4th Floor, No. 16, Min Tsu East Rd., Taipei, Taiwan
Filed Jun. 23, 1978, Ser. No. 918,507
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47

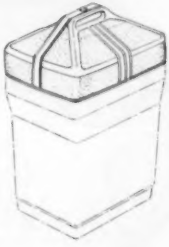


255,862
CUP
Kenneth Ferrin, Aspen, Colo., assignor to East Hampton Industries, Inc.
Filed Aug. 10, 1978, Ser. No. 932,756
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—66

255,863
TRANSPORTABLE OUTDOOR BARBECUE GRILL
Ben F. Futch, P.O. Box 129, Valdosta, Ga. 31601
Filed Jun. 21, 1978, Ser. No. 917,680
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108

255,864
AIR-OPERATED CLEANER
Burton K. Bennett, 2011 L W. Cone Blvd., Greensboro, N.C. 27408
Filed Aug. 28, 1978, Ser. No. 937,157
Term of patent 14 years
Int. Cl. D7—*05;* D15—*05*
U.S. Cl. D7—164

255,865
TRASH CAN COVER
Robert G. Hartman, and Clayton J. Ammondson, both of Reidsville, N.C., assignors to Zarn, Inc., Reidsville, N.C.
Filed Feb. 13, 1978, Ser. No. 877,424
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194



255,866
BOTTLE OPENER
Mihail Panos, 600 N. Harbor Blvd., La Habra, Calif. 90631
Filed Oct. 10, 1978, Ser. No. 949,775
Term of patent 14 years
Int. Cl. D08—*99*
U.S. Cl. D8—38

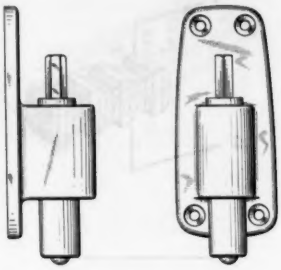
255,867
RAZOR KNIFE WITH FRANGIBLE SHEATH
Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Apr. 12, 1978, Ser. No. 895,876
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98

255,868

HINGE DESIGN

Irving L. Berkowitz, Binghamton, and John J. Bourgeois, Kirkwood, both of N.Y., assignors to Kason Industries, Inc., Binghamton, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,422
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—323

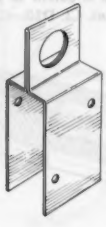


255,869

ROOFING SAFETY BRACKET

John H. Glynn, 7 Richgrove Dr., Apt. 1006, and Patrick J. Glynn, 21 Richgrove Dr., Apt. 712, both of Weston, Ontario, Canada (M9R 2L2)

Filed Apr. 18, 1978, Ser. No. 897,570
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



255,870

BOTTLE

Michael O'Donovan, Maynooth, and Alan F. Lennox, Dublin, both of Ireland, assignors to Loctite Corporation

Filed Aug. 23, 1978, Ser. No. 936,143
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2

255,871

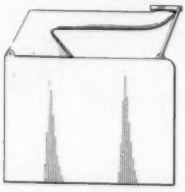
BOTTLE

Michael O'Donovan, Maynooth, and Alan F. Lennox, Dublin, both of Ireland, assignors to Loctite Corporation

Filed Aug. 23, 1978, Ser. No. 936,144
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2

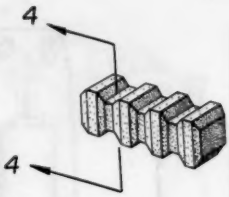
255,872
BOTTLE
Dennis F. Shine, Huntington Beach, Calif., and Gunther W. Torau, Buffalo Grove, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Oct. 5, 1973, Ser. No. 404,075
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—169

255,873
GASOLINE CAN
Al W. Hustrei, 6108 Sally Ave., Bakersfield, Calif. 93308
Filed May 17, 1978, Ser. No. 907,244
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175



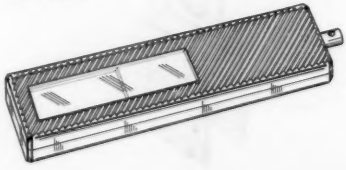
255,874
PACKING BOX
Kazumi Fujimoto, Hino, and Yoshiko Hotani, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 13, 1977, Ser. No. 815,430
Claims priority, application Japan, Jan. 19, 1977, 52/1197
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

255,875
LOOSE-FILL PACKING ELEMENT
Harry D. Atkins, 5802 Troost Ave., North Hollywood, Calif. 91601
Filed Sep. 26, 1977, Ser. No. 836,518
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294

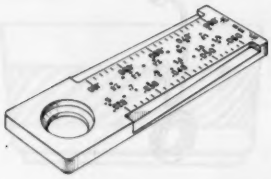


255,876
CLOCK
Dietrich Lubs, Bad Homburg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Jun. 13, 1978, Ser. No. 915,101
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 73 MR8670
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26

255,877
DIGITAL WATCH
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 21, 1978, Ser. No. 888,689
Claims priority, application Japan, Sep. 21, 1977, 52/38492
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30

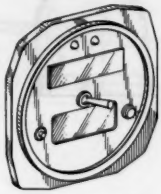


255,878
SPARK PLUG GAPPER
George G. Martin, 1743 Walnut Rd., Kent, Ohio 44240
Filed May 12, 1978, Ser. No. 905,231
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64

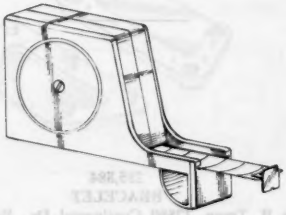


255,879
RADIO DIRECTION FINDER
Peter J. Price, Camberley, England, assignor to A.P.T. Electronics Limited, Reading, England
Filed May 3, 1978, Ser. No. 902,787
Claims priority, application United Kingdom, Nov. 4, 1977, 982160/77
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65

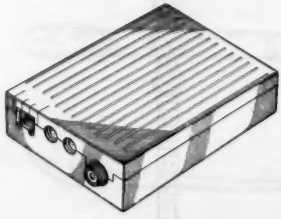
255,880
COURSE ERROR AND DISTANCE INDICATOR OR SIMILAR ARTICLE
Allan A. Beale, Scottsdale, and Cecil N. LaVance, Paradise Valley, both of, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 9, 1978, Ser. No. 914,094
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—67



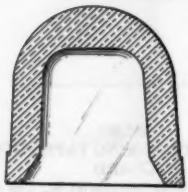
255,881
RETRACTABLE MEASURING TAPE WITH FINGER GUARD
Alexander C. Atienza, 3550 Marguerite St., Los Angeles, Calif. 90065
Filed Mar. 15, 1978, Ser. No. 886,690
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—72



255,882
ALARM AND PAGE SIGNAL TRANSMITTER
Kil Kim, 3450 Wilshire Blvd., Los Angeles, Calif. 90010
Filed Apr. 21, 1978, Ser. No. 899,100
Term of patent 14 years
Int. Cl. D10—*05*; D13—*03*
U.S. Cl. D10—121



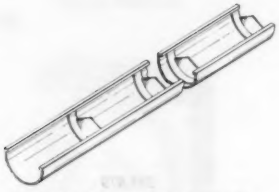
255,883
LENS FOR WARNING LIGHT
Robert A. Ferenc, Middletown, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.
Filed Jun. 28, 1978, Ser. No. 919,867
Term of patent 14 years
Int. Cl. D10—*06;* D26—*06*
U.S. Cl. D10—121



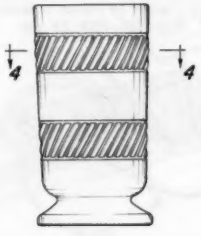
255,884
BRACELET
Charitee B. Trapp, 17580 Continental Dr., Brookfield, Wis. 53005
Filed Apr. 10, 1978, Ser. No. 895,281
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6

255,885
PLASTIC PIERCED EARRING OR SIMILAR ARTICLE
Donna M. Andrews, 3321 Victor Apt. 3, Wichita, Kans. 67208
Filed Sep. 11, 1978, Ser. No. 935,241
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—43

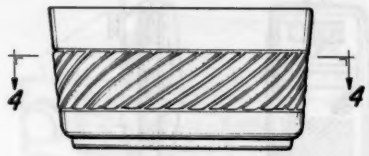
255,886
HOLDER FOR TABULAR CONTAINERS OF PLANT GROWTH MEDIUM
Richard Flynn, Convent Rd., Rush, County Dublin, Ireland
Filed Aug. 9, 1977, Ser. No. 823,182
Claims priority, application Ireland, Feb. 11, 1977, 17/77
Term of patent 14 years
Int. Cl. D11—*02;* D23—*01;* D25—*03*
U.S. Cl. D11—156



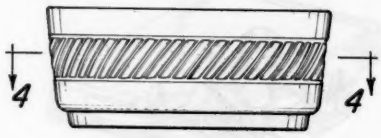
255,887
FLOWER VASE
Martin J. Waterfield, Birmingham, Mich., assignor to Florists' Transworld Delivery Association
Filed Jul. 11, 1979, Ser. No. 56,447
Term of patent 7 years
Int. Cl. D11—*02;* D7—*01*
U.S. Cl. D11—146



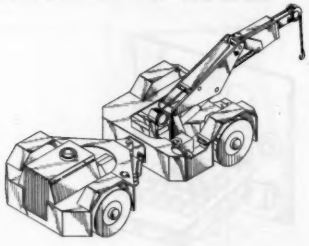
255,888
PLANTER BOWL
Martin J. Waterfield, Birmingham, Mich., assignor to Florists' Transworld Delivery Association
Filed Jul. 11, 1979, Ser. No. 56,449
Term of patent 7 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—152



255,889
PLANTER BOWL
Martin J. Waterfield, Birmingham, Mich., assignor to Florists' Transworld Delivery Association
Filed Jul. 11, 1979, Ser. No. 56,450
Term of patent 7 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—152

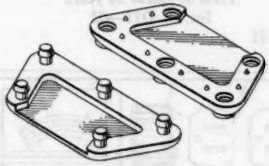


255,890
UNDERGROUND CRANE
Ted W. Wilkes, Jr., and Darel L. Wentworth, both of Lander, Wyo., assignors to Timberline, Inc., Lander, Wyo.
Filed Jan. 5, 1978, Ser. No. 867,359
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57

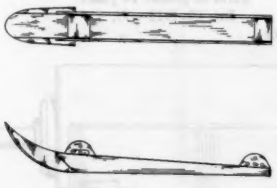


255,891
BOAT
Patrick L. Gibbs, deceased, late of Estill Springs, Tenn., and Beverly K. Gibbs, executrix, Rte. 1, Estill Springs, Tenn. 37330
Continuation-in-part of Ser. No. 630,423, Nov. 10, 1975, abandoned. This application Jun. 17, 1977, Ser. No. 807,416
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62

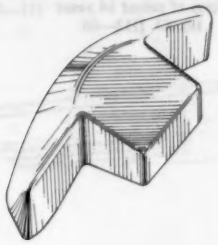
255,892
BATTEN POCKET PROTECTOR
John Fehlberg, 139 Simmat Ave., Bankstown, New South Wales, 2200, Australia
Filed Apr. 25, 1978, Ser. No. 899,836
Claims priority, application Australia, Nov. 1, 1977, 73231
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70



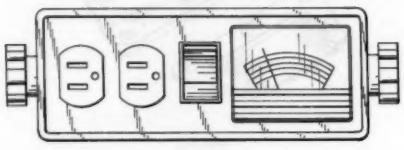
255,893
SNOWMOBILE SKI
Lawrence E. Fritz, 4916 Rondo Dr., Fort Worth, Tex. 76106
Filed May 12, 1978, Ser. No. 905,318
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7



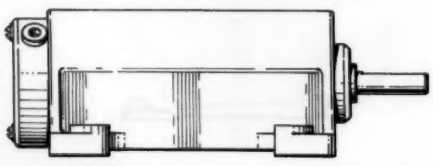
255,894
ACCESSORY CONSOLE FOR MOTORCYCLES
Tommy W. Dixson, 1509 W. Willetta, Phoenix, Ariz. 85007
Filed Jul. 3, 1978, Ser. No. 921,869
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



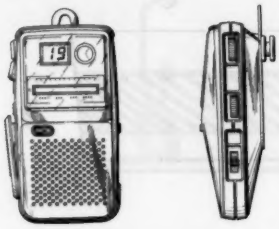
255,895
POWER CONVERTER
Phillip H. Mitchell, Yukon, Okla., assignor to JMJ Electronics Corp., Oklahoma City, Okla.
Filed Oct. 27, 1978, Ser. No. 954,116
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—11



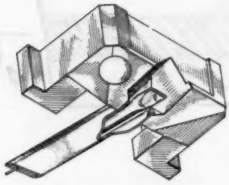
255,896
ELECTROMAGNETIC TRANSDUCER
Seymour Barth, Searingtown, N.Y., assignor to Astrosystems, Inc., Lake Success, N.Y.
Filed Jun. 8, 1978, Ser. No. 913,882
Term of patent 14 years
Int. Cl. D13—*99, 1*
U.S. Cl. D13—99



255,897
CB MICROPHONE OR SIMILAR ARTICLE
Fuminori Yamagata, Yokohama, Japan, assignor to General Electric Company
Filed Jun. 23, 1978, Ser. No. 918,659
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



255,898
PHONOGRAPH STYLUS
James P. Thomsen, Mt. Prospect, and Ronald G. Thielmann, Arlington Heights, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.
Filed Jul. 20, 1977, Ser. No. 817,508
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—28



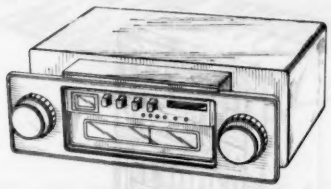
255,899
CODE ENTRY TERMINAL FOR SECURITY ACCESS SYSTEM
Joseph W. Karas; Robert F. Pfeifer, and Robert Samson, all of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 8, 1978, Ser. No. 913,929
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42

255,900

MOTOR VEHICULAR CITIZENS' BAND TRANSCEIVER

Kikuo Ohta; Toshio Igo, both of Katano, and Satoru Usami, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 20, 1977, Ser. No. 817,292
Claims priority, application Japan, Jan. 20, 1977, 52-1484
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

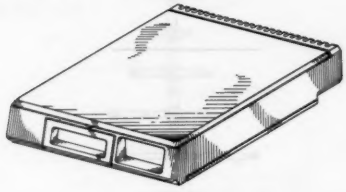


255,901

VEHICULAR RADIO HOUSING OR SIMILAR ARTICLE

Masaru Tokiyama, Arlington, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 21, 1978, Ser. No. 898,369
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



255,902

PROJECTION TELEVISION RECEIVER

Chuichi Inoue, Uji, and Minoru Hashimoto, Ibaragi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

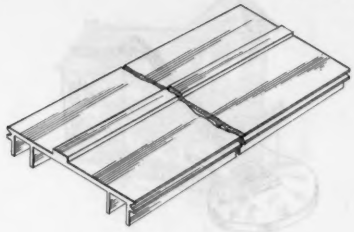
Filed Apr. 11, 1978, Ser. No. 895,418
Claims priority, application Japan, Oct. 14, 1977, 52-40944
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79

255,903

GUIDE RAIL

H. Edward Cable, Pittsburgh, Pa., assignor to Weld Tooling Corporation, Pittsburgh, Pa.

Filed Nov. 9, 1977, Ser. No. 849,842
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139



255,904

PIANO KEYBOARD LEVEL ADJUSTING BAR

Gilles Therrien, 10405 boulevard Saint-Michel, Montreal Nord, Quebec, Canada

Filed Oct. 20, 1977, Ser. No. 844,052
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—9

255,905

GUITAR OR THE LIKE

Emil H. Soika, 2312 E. Grand Ave., Lindenhurst, Ill. 60046, and Robert R. Genc, 117 E. Grove, Mundelein, Ill. 60060, assignors to Emil Henry Soika and Robert Russell Genc

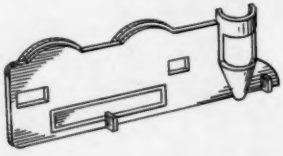
Filed Jul. 21, 1977, Ser. No. 817,789
Term of patent 7 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

255,906

COMBINED PERPETUAL CALENDER AND WRITING INSTRUMENT HOLDER

Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Co., Skokie, Ill.

Filed Mar. 6, 1978, Ser. No. 884,044
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—23



255,907

CIGARETTE VENDING MACHINE

Walter E. Moore, Bel-Nor, and Albert K. Grethey, Bridgeton, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

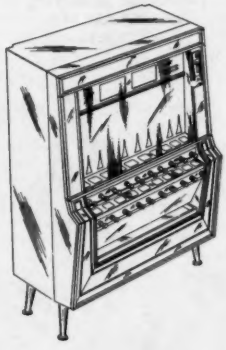
Filed Sep. 22, 1978, Ser. No. 944,882
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4

255,908

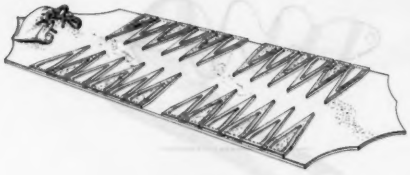
CIGARETTE VENDING MACHINE

Walter E. Moore, Bel-Nor, and Albert K. Grethey, Bridgeton, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Sep. 22, 1978, Ser. No. 944,881
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4

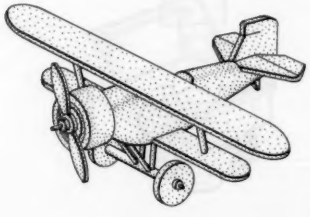


255,909
FLEXIBLE GAME BOARD
Glenn L. Miller, Box 9, Mokelumne Hill, Calif. 95245
Filed Jul. 21, 1978, Ser. No. 926,708
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15



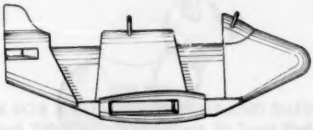
255,910
MULTI-LEVEL CHESSBOARD
Michael D. Bergman, 4932 Golf Glen Rd., Bonita, Calif. 92002
Filed Nov. 17, 1978, Ser. No. 961,584
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—23

255,911
TOY AIRPLANE
Michael G. Theodore, 11925 Leighwood Dr., Plymouth, Mich. 48170
Filed Apr. 17, 1978, Ser. No. 896,973
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—90



255,912
DOLLHOUSE
Milo G. Chapman, Newberg, and David E. Christie, Aurora, both of Oreg., assignors to Dura-Craft, Inc., Aurora, Oreg.
Filed Jun. 30, 1978, Ser. No. 921,362
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114

255,913
JET AIRPLANE SHAPED SEAT FOR PLAYGROUND APPARATUS
Steven A. Lofton, Litchfield, and David C. Mulligan, Blissfield, both of Mich., assignors to Game Time, Inc., Fort Payne, Ala.
Filed Aug. 23, 1978, Ser. No. 936,072
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—250



255,914
FIGURINE WITH BLINKING EYE
Rocco J. Starniri, 1607 Ferry, Easton, Pa. 18042
Filed Aug. 15, 1978, Ser. No. 934,054
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168

255,915
LEG EXERCISER
Leslie T. Applegate, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Jul. 24, 1978, Ser. No. 927,748
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

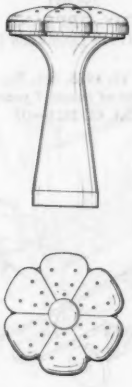
255,916
PANDA BEAR SHAPED SEAT FOR PLAYGROUND APPARATUS
Steven A. Lofton, Litchfield, and David C. Mulligan, Blissfield, both of Mich., assignors to Game Time, Inc., Fort Payne, Ala.
Filed Aug. 23, 1978, Ser. No. 936,073
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—247

255,917
PISTOL
Rex R. Merrill, P.O. Box 187, Rockwell City, Iowa 50579
Filed Mar. 30, 1978, Ser. No. 891,933
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

255,918
FISH LURE
William E. Hogreff, 295 D St., Apt. B, Chula Vista, Calif. 92010
Filed May 4, 1978, Ser. No. 902,998
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

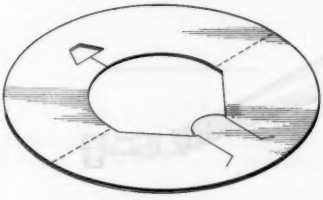
255,919
FISHING BOBBER
James R. Crofton, 500 Olive St., West Concord, Minn. 55985
Filed Dec. 22, 1978, Ser. No. 973,234
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

255,920
SPRINKLER HEAD
Frank R. Antonell, 18 Country Corners Rd., Wayland, Mass. 01778
Filed Aug. 30, 1978, Ser. No. 938,119
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

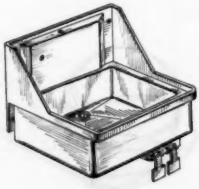


255,921
WALL SPOUT
Donald W. Doman, Janesville, Wis., assignor to Kohler Co.
Division of Ser. No. 779,926, Mar. 21, 1977, Pat. No. Des. 248,564. This application Apr. 21, 1978, Ser. No. 899,022
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

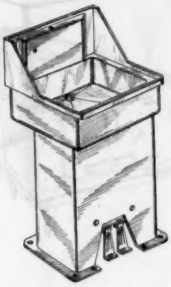
255,922
CHILD'S DISPOSABLE TOILET SEAT
Ronald V. Price, and Marilyn E. Price, both of 3926 Josephine St., Lynnwood, Calif. 90262
Filed Dec. 21, 1978, Ser. No. 971,958
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—53



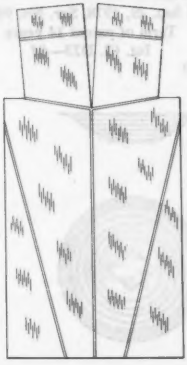
255,923
SINK
Alan F. Rosenkranz, East Northport, N.Y., assignor to United Utensils Company, Inc.
Filed Oct. 23, 1978, Ser. No. 953,414
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



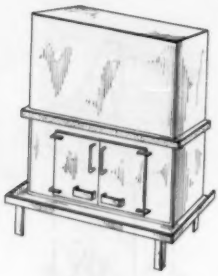
255,924
SINK
Alan F. Rosenkranz, Northport, N.Y., assignor to United Utensils Company, Inc.
Filed Oct. 23, 1978, Ser. No. 953,420
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—61



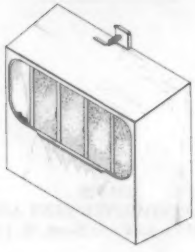
255,925
BLANK FOR A COMBINED VENT AND BAFFLE
Bruce K. Ward, 2904 Virginia Ave. South, St. Louis Park, Minn. 55426
Division of Ser. No. 746,526, Dec. 1, 1976, Des. Pat. No. 247,628. This application Mar. 20, 1978, Ser. No. 888,520
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



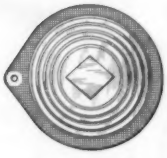
255,926
FIREPLACE
Niilo H. Teeri, Korppaantie 8 D, SF-00300 Helsinki 30, Finland
Filed Apr. 25, 1978, Ser. No. 900,023
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



255,927
ROOM HUMIDIFIER
James E. Vesper, 2408 Stratton Dr., Potomac, Md. 20854
Filed Mar. 30, 1978, Ser. No. 891,780
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—147



255,928
DISPENSER FOR AIR TREATING MATERIAL
Earl Hoyt, Franklin Lakes, N.J., assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed Sep. 29, 1978, Ser. No. 948,051
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



255,929
IMPROVED DENTAL HANDPIECE
George K. Austin, Jr., P.O. Box 209, Rte. 2, Box 254, Newberg, Oreg. 97132
Filed Feb. 15, 1978, Ser. No. 878,172
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

255,930
DENTAL HANDPIECE
John D. Nilles, Roselle, and Stanley L. Stankiewicz, Chicago, both of Ill., assignors to American Hospital Supply Corporation
Filed May 30, 1978, Ser. No. 910,970
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12

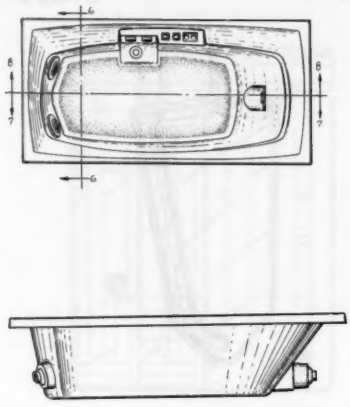
255,931
ORTHODONTIC HARNESS
Donald R. Therrien, 190 Woodland Ave., Laconia, N.H. 03246
Filed Dec. 12, 1977, Ser. No. 859,980
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—33

255,932

HYDROMASSAGE TUB

Ralph D'Innocente, Pleasant Hill, and Roy A. Jacuzzi, Moraga, both of Calif., assignors to Jacuzzi Whirlpool Bath, Inc.

Filed Feb. 21, 1978, Ser. No. 879,710
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02*
U.S. Cl. D24—36

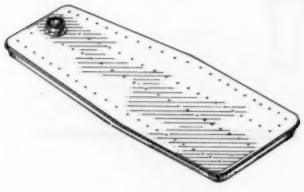


255,933

PORTABLE AIR BUBBLE MAT

Harold J. Link, 1207 SE. 16th St., Ocala, Fla. 32670

Filed Aug. 4, 1978, Ser. No. 931,108
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—38

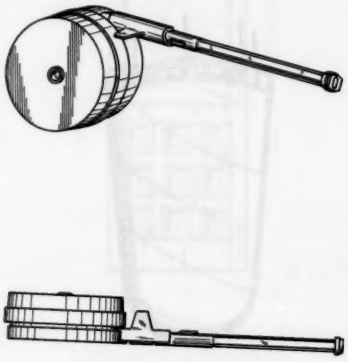


255,934

UNIDIRECTIONAL CATHETER PLACEMENT UNIT, OR THE LIKE

Richard M. Chittenden, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 25, 1977, Ser. No. 854,859
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54



255,935

BLOOD PROCESSING CONTAINER

Herbert M. Cullis, Silver Spring, Md., and Richard I. Brown, Northbrook, Ill., assignors to Baxter Travenol Laboratories, Inc.

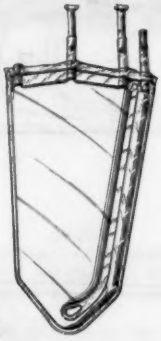
Filed Nov. 7, 1977, Ser. No. 849,482
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58

255,936

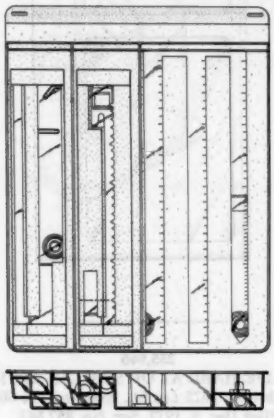
BLOOD PROCESSING CONTAINER

Herbert M. Cullis, Silver Spring, Md., and Richard I. Brown, Northbrook, Ill., assignors to Baxter Travenol Laboratories, Inc.

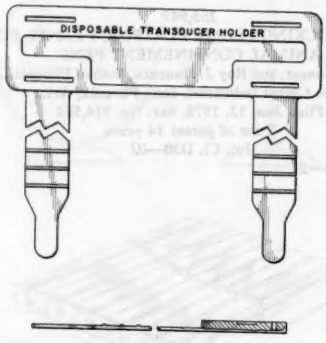
Filed Nov. 7, 1977, Ser. No. 849,487
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58



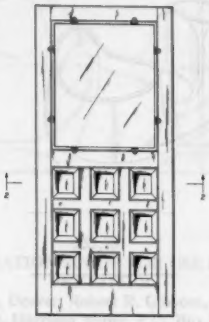
255,937
PLEURAL CAVITY DRAINAGE CONTAINER
Leonard D. Kurtz, Woodmere, and Robert E. Bidwell, Melville, both of N.Y., assignors to Howmedica Inc., New York, N.Y.
Division of Ser. No. 810,579, Jun. 27, 1977, Des. Pat. No. 250,207. This application Mar. 31, 1978, Ser. No. 892,468
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



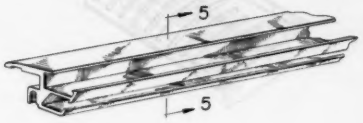
255,938
TRANSDUCER HOLDER
David Hawke, LaVerne, and M. Janet Kirkwood, Montebello, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio
Filed Dec. 12, 1977, Ser. No. 859,451
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—99



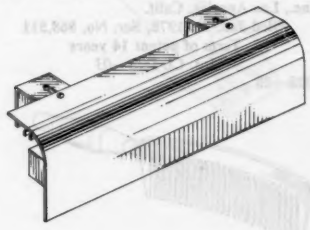
255,939
PLASTIC STORM DOOR
Peter R. Emanuel, Marine City, Mich., assignor to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Jan. 16, 1978, Ser. No. 869,941
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



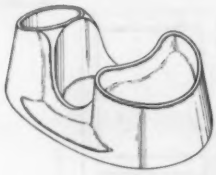
255,940
FRAME EXTRUSION MOLDING
Gerald A. Kwan, Pasadena, and George E. DeStepheno, San Dimas, both of Calif., assignors to Le Van Specialty Co., Inc., City of Industry, Calif.
Filed Jul. 17, 1978, Ser. No. 925,440
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



255,941
PORTABLE GALLERY LAMP
Darwin D. Grant, 8757 E. Monterosa, Scottsdale, Ariz. 85251
Filed Nov. 27, 1978, Ser. No. 964,331
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—76



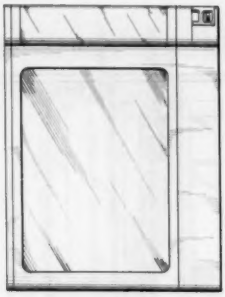
255,942
PIPE STAND
Morry Karp, 2850 E. 44th St., Los Angeles, Calif. 90058
Filed Jun. 2, 1978, Ser. No. 911,775
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—02



255,943
SCOOP WITH CLEANING SLOTS FOR SMOKING TOBACCO AND THE LIKE
Eugene Hernandez, Box 101, Garner Valley, Mountain Center, Calif. 92361
Filed Jan. 16, 1978, Ser. No. 869,809
Term of patent 7 years
Int. Cl. D7—*04;* D27—*99;* D30—*99*
U.S. Cl. D27—51

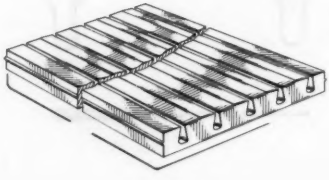
255,944
COMBINED COMB AND SPRAY ATOMIZER
William E. Haselrig, Riveria, Ariz., assignor to Transwestern Sales, Inc., Los Angeles, Calif.
Filed Jan. 11, 1978, Ser. No. 868,511
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—25

255,945
LIGHTED TRAVELING MIRROR
Francis W. MacGregor, New Britain, Conn., assignor to Clairol Incorporated
Filed Jul. 31, 1978, Ser. No. 929,767
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—67



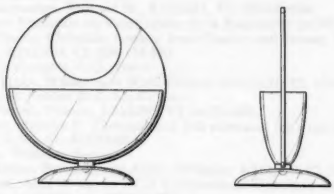
255,946
WILDLIFE HABITAT OR SIMILAR ARTICLE
Donald J. Galbreath, 2320 Lee St., Evanston, Ill. 60202
Filed Dec. 5, 1977, Ser. No. 857,862
Term of patent 7 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

255,947
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, and Roy J. Hancock, both of Phoenix, Ariz., assignors to Corral Industries, Inc., Phoenix, Ariz.
Filed Jun. 12, 1978, Ser. No. 914,584
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2

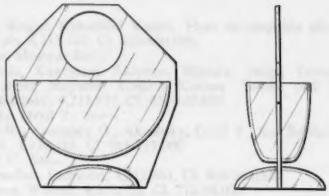


255,948
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Feb. 26, 1979, Ser. No. 15,727
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6

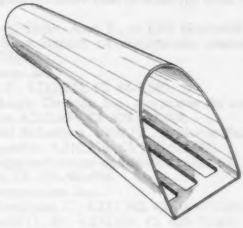
255,949
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Nov. 22, 1978, Ser. No. 963,169
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8



255,950
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Jan. 2, 1979, Ser. No. 285
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8



255,951
SOLIDS SEPARATION SCOOP FOR USE IN CLEANING PET LITTER
Kenneth F. Halls, Denver; Robert R. Gibbons, Lakewood, both of Colo., and D. Harrison Miller, P.O. Box 84, Fort Collins, Colo. 80522, assignors to D. Harrison Miller, Fort Collins, Colo.
Continuation-in-part of Ser. No. 754,612, Dec. 27, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 870,891
Term of patent 14 years
Int. Cl. D30—*99*; D7—*04, 99*
U.S. Cl. D30—99



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TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Akerlund & Rausing: *See*—
Jeppsson, Jan-Bertil, 4,212,409, Cl. 220-276.000.

AB Atomenergi: *See*—
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

AB Svenska Flaktabriken: *See*—
Andersson, Karl-Hugo S., 4,212,113, Cl. 34-156.000.

Abar Corporation: *See*—
Kreider, Benjamin A.; and Metalsky, William J., 4,212,633, Cl. 432-122.000.

Abe, Shunji: *See*—
Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, 4,212,787, Cl. 260-33.6AQ.

Abic, Ltd.: *See*—
Schonberger, Eva; Sasson, Zabar; and Michael, Uri, 4,212,814, Cl. 260-347.800.

Able, Edward T.: *See*—
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,212,196, Cl. 73-136.00R.

ACF Industries, Incorporated: *See*—
Basch, Walter E.; and Wallis, Roger G., 4,212,316, Cl. 137-543.170.
Behle, Gunter R., 4,212,447, Cl. 251-98.000.
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Acker, Roy M.; and Lui, Kenneth, to United States of America, Air Force. Hermetic electrical feedthrough for aluminum housing and method of making same. 4,213,004, Cl. 174-151.000.

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Adams, Robert P., to Virtis Company, Inc., The. Fermenting apparatus. 4,212,950, Cl. 435-316.000.

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Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., 4,213,183, Cl. 364-507.000.

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Adler's Seeds, Inc.: *See*—
Adler, Howard, 4,212,115, Cl. 34-215.000.

Admiral Corporation: *See*—
Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., 4,213,189, Cl. 364-100.000.

Adolphi, Heinrich: *See*—
Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, 4,212,861, Cl. 424-200.000.

AEG Isolier- und Kunststoff GmbH: *See*—
Wartusch, Johann; and Fasbender, Helmut, 4,212,912, Cl. 428-209.000.

Aeroquip Corporation: *See*—
Alexander, Richard M., 4,213,021, Cl. 200-81.90M.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Pinazzi, Christian; Lenain, Jean-Claude; and Brosse, Jean-Claude, 4,212,718, Cl. 204-159.230.

AGFA-Gevaert, A.G.: *See*—
Franke, Walter; and Wolf, Ottmar, 4,212,631, Cl. 432-60.000.

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Ferrari, Franco, 4,212,092, Cl. 16-35.00R.

Aguiar, Mervyn F. Turboexhaust hub extension for a marine propeller. 4,212,586, Cl. 416-93.00A.

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Krone, Bernard; and Ahler, Wilhelm, 4,212,149, Cl. 56-341.000.

Ahmed, Adel A. A., to RCA Corporation. Transistor saturation control. 4,213,068, Cl. 307-255.000.

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Air Products and Chemicals, Inc.: *See*—
Daniel, Chelliah, 4,212,767, Cl. 252-435.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, 4,212,500, Cl. 303-115.000.

Ajinomoto Company, Incorporated: *See*—
Satou, Osahiro; Yamaguchi, Makoto; and Hasegawa, Mikio, 4,212,798, Cl. 260-123.500.

Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Heat developable photosensitive materials. 4,212,937, Cl. 430-620.000.

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Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.

Akushsky, Izrail Y.: *See*—
Smolko, Gennady G.; Akushsky, Izrail Y.; and Burtsev, Vladimir M., 4,213,188, Cl. 364-739.000.

Akzo N.V.: *See*—
Cornelius, Lammert, 4,212,863, Cl. 424-240.000.
Henne, Werner, 4,212,738, Cl. 210-94.000.
van Neerbos, Abraham; and van Oosterhout, Adrianus C. J., 4,212,901, Cl. 427-53.100.

Akzona Incorporated: *See*—
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, 4,212,692, Cl. 156-167.000.
Tax, Lambert J. W. M., 4,212,864, Cl. 424-243.000.
Vollbrecht, Rolf; and Ostertag, Karl, 4,212,915, Cl. 428-288.000.

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Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., 4,212,983, Cl. 548-352.000.

Alexander, Richard M., to Aeroquip Corporation. Indicating check valve. 4,213,021, Cl. 200-81.90M.

Alfred University Research Foundation: *See*—
Reed, James S.; and Moore, Roger H., 4,212,924, Cl. 428-428.000.

Algoship International Limited: *See*—
Campbell, George T. R.; and Morioke, Yukitoshi, 4,212,404, Cl. 212-238.000.

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Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,213,113, Cl. 338-309.000.

Allen, Derek R. Angularly related dual stethoscope head. 4,212,368, Cl. 181-131.000.

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Woron, Robert P., 4,212,221, Cl. 84-1.260.

Allen, Paul E., to Logic Devices, Inc. Apparatus for cooling plastic injection mold dies. 4,212,623, Cl. 425-547.000.

Allen, Robert H.; and Robertson, Victor J., to Moore Business Forms, Inc. Envelope assembly. 4,212,396, Cl. 206-629.000.

Alley, Donald E. Edge and corner cushion for palletized packages and the like. 4,212,394, Cl. 206-586.000.

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Narasimnan, Mandayam C., 4,212,343, Cl. 164-64.000.
Sachleben, Harold G., Sr., 4,212,606, Cl. 425-72.00S.

Allis-Chalmers Corporation: *See*—
Conrad, Ralph M.; and Bliemeister, Robert M., 4,212,632, Cl. 432-115.000.

Alman, Donald W.; Gerwitz, Paul F.; and Tygard, Charles M., to Carrier Corporation. Variable resistance potentiometer. 4,213,112, Cl. 338-183.000.

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Genevey, Jacques, 4,212,326, Cl. 138-40.000.

Alyamovsky, Stanislav I.: *See*—
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Amerace Corporation: *See*—
Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., 4,212,387, Cl. 206-223.000.

American Atomics Corporation: *See*—
Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., 4,213,052, Cl. 250-462.000.

American Can Company: *See*—
Johnson, Donald O., 4,212,584, Cl. 414-748.000.
Miller, Fredric N., 4,212,607, Cl. 425-83.100.
Wolfelsperger, Robert O.; and Pasco, William R., 4,212,213, Cl. 83-56.000.

American Cyanamid Company: *See*—
Randvere, Fredrik V.; and Konzelman, Leroy M., 4,212,971, Cl. 544-37.000.
Wissner, Allan, 4,212,969, Cl. 542-429.000.

American Home Products Corporation: *See*—
Medvecky, Eugene, 4,213,135, Cl. 346-76.0PH.

American Optical Corporation: *See*—
Bragg, Robert C., Jr.; and Hawley, John T., 4,212,224, Cl. 85-1.00K.
Dokus, Edwin A.; and Banks, David, 4,213,161, Cl. 360-73.000.

Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., to Emerson Electric Co. Bearing take-up frame. 4,212,502, Cl. 308-3.00R.

AMP Incorporated: *See—*
Bunnell, Edward D., 4,212,507, Cl. 339-18.00B.
Malucci, Robert D.; and Reynolds, Charles E., 4,212,511, Cl. 339-276.00T.
Ritchie, Leon T.; and Peppler, Michael S., 4,212,510, Cl. 339-147.00R.

Anaconda Company, The: *See—*
Schauffelle, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., 4,212,151, Cl. 57-9.000.

Andersson, Allan; and Bergstrom, Bert, to Sandvik Aktiebolag. Tubular drill tool. 4,212,569, Cl. 408-59.000.

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Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Antiskid brake control arrangement for vehicle wheels. 4,212,500, Cl. 303-115.000.

Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Hot-runner mold and injection molding method making use of the same. 4,212,624, Cl. 425-548.000.

Andover Controls Corporation: *See—*
Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., 4,213,174, Cl. 364-104.000.

Andreoli, Mario. Modular element radiator-convector. 4,212,350, Cl. 165-129.000.

Andrews, Glenn C., to Pfizer Inc. Preparation of 2-ketogulonic acid. 4,212,988, Cl. 560-174.000.

Andros, Frank E.; and Shay, Robert J. E., to International Business Machines Corporation. Micro bellows thermo capsule. 4,212,349, Cl. 165-105.000.

Anic, S.p.A.: *See—*
D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, 4,212,703, Cl. 162-129.000.

Anspon, Harry D., to United States Steel Corporation. Process for preparing high impact polystyrenes. 4,212,789, Cl. 260-33.6AQ.

Anthony Manufacturing Corp.: *See—*
Choi, Mansam, 4,212,426, Cl. 239-230.000.

Antos, George J., to UOP Inc. Process for the simultaneous production of a high octane motor fuel and isobutane. 4,212,727, Cl. 208-111.000.

Antos, George J., to UOP Inc. Attenuated superactive multimetallic catalytic composite. 4,212,769, Cl. 252-441.000.

Aoki, Masaki: *See—*
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,212,838, Cl. 264-25.000.

Apanovitch, Agaton P. Positive displacement, continuous combustion rotary engine. 4,212,282, Cl. 123-204.000.

Arad, Avi, to Louis Marx & Co., Inc. Pinball game with plural re-projectors actuable by single solenoid acted upon by single switch. 4,212,465, Cl. 273-121.00A.

Arai, Akihiro: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.

Arai, Kiyotaka: *See—*
Suhara, Manabu; and Arai, Kiyotaka, 4,212,713, Cl. 204-98.000.

Arai, Yoshio. Multiple seal ring having a tapered surface, and a sealing device. 4,212,473, Cl. 277-81.00P.

Arai, Yoshio. Seal ring having tapered surface and sealing device incorporating the same. 4,212,474, Cl. 277-83.000.

Are, Endel. Wind energy conversion device. 4,213,057, Cl. 290-44.000.

Arjomari-Prioux: *See—*
Gomez, Daniel; and Bartoli, Giampaolo, 4,212,927, Cl. 428-512.000.

Armour Pharmaceutical Company: *See—*
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,212,795, Cl. 260-112.50T.

Arney, William C., Jr., to Union Carbide Corporation. Wood-polymer composites. 4,212,928, Cl. 428-514.000.

Arold, Hermann, to Bayer Aktiengesellschaft. Preparation of o-dialkylaminomethylphenols. 4,212,822, Cl. 260-570.900.

Arvin Industries: *See—*
Williams, Ronald S.; and Hill, Robert S., 4,212,099, Cl. 29-507.000.

Arzoumanian, Aram S.: *See—*
Edwards, Albert L.; and Arzoumanian, Aram S., 4,212,549, Cl. 400-154.000.

Asahi Glass Company, Limited: *See—*
Suhara, Manabu; and Arai, Kiyotaka, 4,212,713, Cl. 204-98.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.
Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, 4,212,624, Cl. 425-548.000.
Ibata, Jyoji; Fujita, Yukio; and Kominami, Naoya, 4,212,790, Cl. 260-40.00R.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.

Asahi Medical Co., Ltd.: *See—*
Oota, Kazuhiro, 4,212,744, Cl. 210-321.00B.

Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., to United States of America, Air Force. Wing pivot assembly for variable sweep wing aircraft. 4,212,441, Cl. 244-46.000.

Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., to Union Carbide Corporation. Dielectric composition stabilized against water treeing with organo silane compounds. 4,212,756, Cl. 252-63.200.

Asher, Raymond C.: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Aslami, Mohd A., to Corning Glass Works. Reactants delivery system for optical waveguide manufacturing. 4,212,663, Cl. 65-144.000.

Asmundsson, Einar: *See—*
Fleischer, Donald W.; and Asmundsson, Einar, 4,213,037, Cl. 235-92.00B.

Aso, Minosaku: *See—*
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, 4,212,154, Cl. 368-248.000.

Associated Metals & Minerals Corporation: *See—*
King, Edwin B.; Barnes, Wilson R.; and Pommier, Luis W., 4,212,666, Cl. 75-85.000.

Astafiev, Anatoly A.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Astec: *See—*
Buys, Bruno, 4,212,215, Cl. 83-109.000.

Athearn, Lee F., to Medtronic, Inc. Lithium-halogen batteries. 4,212,930, Cl. 429-101.000.

Atomenergikommissionen: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Auten, Jerry P. Roof coating system. 4,212,913, Cl. 428-251.000.

Automatic Parking Devices, Inc.: *See—*
Schasser, Donald S., 4,213,039, Cl. 235-449.000.

Avco Corporation: *See—*
Kuintzle, Charles, Jr.; and Murphy, Joseph P., 4,212,595, Cl. 417-84.000.

Avedesian, Michael M.; and Holko, Anthony P., to Noranda Mines Limited. Apparatus for electrowinning metal from metal bearing solutions. 4,212,722, Cl. 204-222.000.

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Avrukh, Elizaveta L.: *See—*
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Ax, Wolfgang: *See—*
Bauer, Hartwig W.; and Ax, Wolfgang, 4,212,650, Cl. 23-230.00B.

Axen, Udo F., to Upjohn Company, The. 2,2-Difluoro-PGE_2 analogs. 4,212,986, Cl. 560-121.000.

Axen, Udo F., to Upjohn Company, The. 2,2-Difluoro-PGE_1 analogs. 4,212,987, Cl. 560-121.000.

Aymard, Reni: *See—*
Voituriez, Henry; and Aymard, Reni, 4,212,253, Cl. 110-182.500.

Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, to Matsushita Electric Industrial Co., Ltd. Process for manufacture of cantilever for pickup cartridge. 4,212,838, Cl. 264-25.000.

B. F. Goodrich Company, The: *See—*
Enright, John J.; and Holzworth, William T., 4,212,376, Cl. 188-218.0XL.

B. K. Sweeney Manufacturing Company: *See—*
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,212,196, Cl. 73-136.00R.

Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G. Process for the purification of waste liquors in the production of phenolformaldehyde resins. 4,212,775, Cl. 260-17.200.

Babington, William M., Jr.; and Bridge, Adam P. Apparatus for recovering high pressure steam from a blow tank. 4,212,705, Cl. 162-238.000.

Badanin, Vladimir I.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Bagdan, Henry J.; and Blain, William A., to Nabisco, Inc. Apparatus for producing a flow of short cheese strands. 4,212,617, Cl. 425-311.000.

Baggaley, Keith H., to Beecham Group Limited. 2-Substituted benzisothiazolones and use thereof. 4,212,872, Cl. 424-270.000.

Baggaley, Keith H., to Beecham Group Limited. 2-Substituted benzisothiazolones. 4,212,979, Cl. 546-270.000.

Bakanov, Anatoly I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Baker, David C., to Warner-Lambert Company. Method for the production of 9-(2-O-acyl-β-D-arabinofuranosyl)adenine compounds. 4,212,941, Cl. 435-92.000.

Bakker, Wate T., to General Refractories Company. Periclase refractory and its method of manufacture. 4,212,778, Cl. 260-22.00A.

Balandin, Jury F.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Balassa, Leslie L.; and Prudden, John F., to Lescarden Ltd. Method for stimulating the production of immunoglobulin and total complement. 4,212,857, Cl. 424-95.000.

Baldwin, Blair F.; and Stoddard, Deborah, to Baldwin, Stoddard & Company. System of interactive blocks. 4,212,117, Cl. 35-31.00C.

Baldwin, Blair F.; and Stoddard, Deborah, to Baldwin, Stoddard & Company. System of interactive blocks. 4,212,118, Cl. 35-31.00C.

Baldwin, Stoddard & Company: *See*—
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Baldwin, Blair F.; and Stoddard, Deborah, 4,212,118, Cl. 35-31.00C.

Balko, Edward N.: *See*—
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,212,714, Cl. 204-98.000.

Ballard Medical Products, Inc.: *See*—
Moorehead, Harvey R., 4,212,309, Cl. 128-766.000.

Ballocci, Giovanni, to Industrie Pirelli, S.p.A. Plant for curing conveyor belts and the like. 4,212,619, Cl. 425-373.000.

Banks, David: *See*—
Dokus, Edwin A.; and Banks, David, 4,213,161, Cl. 360-73.000.

Banks, Stanley E.: *See*—
Roche, Dwain F.; and Banks, Stanley E., 4,212,598, Cl. 417-229.000.

Barber, Donald L., Jr.; and Caron, Bernard G., to Corning Glass Works. Method and apparatus for dispensing frit having a hydraulically actuated piston. 4,212,413, Cl. 222-1.000.

Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, to Etablissement Public de Diffusion dit "Telediffusion de France"; and L'Etat Francais. System for digitally transmitting and displaying texts on television screen. 4,213,124, Cl. 340-706.000.

Barker, David H.: *See*—
Stelling, David; Barker, David H.; and Weston, Terence E., 4,212,845, Cl. 422-82.000.

Barnes, Wilson R.: *See*—
King, Edwin B.; Barnes, Wilson R.; and Pommier, Luis W., 4,212,666, Cl. 75-85.000.

Barnett, David L. Fishing rod. 4,212,126, Cl. 43-24.000.

Barone, Angelo P.: *See*—
Schauffele, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., 4,212,151, Cl. 57-9.000.

Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., to Adaptronics, Inc. System for nondestructive evaluation of material flaw characteristics. 4,213,183, Cl. 364-507.000.

Barry-Wehmiller Company: *See*—
Beach, Donald J.; and Smith, Robert J., 4,213,042, Cl. 250-223.00B.

Bartoli, Giampaolo: *See*—
Gomez, Daniel; and Bartoli, Giampaolo, 4,212,927, Cl. 428-512.000.

Barton, Bruce L.; Johnson, Walter E.; and Notaro, Anthony J., to Special Metals Corporation. Decarburization of metallic alloys. 4,212,665, Cl. 75-10.00V.

Barton, Harvey R., Jr.: *See*—
Rauchfuss, Charles G., Jr.; Herman, Ralph; and Barton, Harvey R., Jr., 4,212,422, Cl. 226-196.000.

Basch, Walter E.; and Wallis, Roger G., to ACF Industries, Incorporated. Control valve. 4,212,316, Cl. 137-543.170.

BASF Aktiengesellschaft: *See*—
Baumann, Hans, 4,212,801, Cl. 260-145.00A.
Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, 4,212,760, Cl. 252-156.000.
Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, 4,212,737, Cl. 210-77.000.
Degen, Hans-Juergen; and Grychtol, Klaus, 4,212,644, Cl. 8-506.000.
Goetz, Norbert; Himmele, Walter; and Hupfer, Leopold, 4,212,972, Cl. 544-106.000.
Habermann, Wolfgang; Thoma, Peter; and Wintermantel, Klaus, 4,212,725, Cl. 204-290.00F.
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.
Patsch, Manfred; Schneider, Dieter; Gotsmann, Guenther; and Hettche, Albert, 4,212,709, Cl. 204-49.000.
Paust, Joachim; Schneider, Joachim; and Jaedicke, Hagen, 4,212,827, Cl. 568-347.000.
Schnell, Georg; Hammon, Fritz; and Ohlinger, Manfred, 4,212,903, Cl. 427-127.000.
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, 4,212,436, Cl. 242-192.000.
Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, 4,212,861, Cl. 424-200.000.
Tiefenbacher, Hubert; Kraus, Friedrich; and Matthias, Guenther, 4,212,890, Cl. 426-69.000.
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.

Bath, Nigel A.: *See*—
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.

Battle, Jno R. Nail-less horseshoe. 4,212,356, Cl. 168-18.000.

Bauer, Hartwig W.; and Ax, Wolfgang, to Behringwerke Aktiengesellschaft. Diagnostic process. 4,212,650, Cl. 23-230.00B.

Bauer, Werner R., to Robershaw Controls Company. Reversing valve construction and method of making the same. 4,212,324, Cl. 137-625.660.

Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, to Siemens Aktiengesellschaft. Photocathode for electroradiographic and electrofluoroscopic apparatus and method for manufacturing same. 4,212,911, Cl. 428-131.000.

Baumann, Hans, to BASF Aktiengesellschaft. Unsymmetrical 1:2-chromium complexes containing an azo and an azomethine bond. 4,212,801, Cl. 260-145.00A.

Baumgartner Papiers S.A.: *See*—
Ducommun, Joel; and Vulliens, Philippe, 4,212,541, Cl. 356-430.000.

Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, to BASF Aktiengesellschaft. Solubilized alkaline, aqueous solutions of nonionic surfactants. 4,212,760, Cl. 252-156.000.

Bayer Aktiengesellschaft: *See*—
Arold, Hermann, 4,212,822, Cl. 260-570.900.
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Kolbe, Joachim, 4,212,749, Cl. 252-8.750.
Kruckenberg, Winfried, 4,212,803, Cl. 260-154.000.
Lehr, Gunter; and Binsack, Rudolf, 4,212,963, Cl. 528-272.000.
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,212,982, Cl. 548-313.000.
Mitschke, Karl-Heinz; and Schliebs, Reinhard, 4,212,832, Cl. 260-930.000.
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, 4,212,809, Cl. 260-340.50R.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.
Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, 4,212,746, Cl. 210-495.000.

BBC Brown, Boveri & Company, Limited: *See*—
Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.
Kuhnen, Gottfried, 4,213,025, Cl. 219-73.200.

Beach, Donald J.; and Smith, Robert J., to Barry-Wehmiller Company. Container chipped crown ring detector. 4,213,042, Cl. 250-223.00B.

Beamish, Lloyd W.: *See*—
Schauffele, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., 4,212,151, Cl. 57-9.000.

Beaucamp, Klaus: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hager, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.

Beazley, William W.: *See*—
Dougherty, Harry L.; and Beazley, William W., 4,212,637, Cl. 433-5.000.

Beckman Instruments, Inc.: *See*—
Hanlon, Brenton G. A.; Chang, Jaw-Kang; and Fong, Bosco T. W., 4,212,797, Cl. 260-112.50R.

Becton, Dickinson and Company: *See*—
Percarpio, Edward P., 4,212,308, Cl. 128-766.000.

Beecham Group Limited: *See*—
Baggaley, Keith H., 4,212,872, Cl. 424-270.000.
Baggaley, Keith H., 4,212,979, Cl. 546-270.000.

Beekenkamp, Gerald, to London Concrete Machinery Co. a division of Hodgson Machine & Equipment Ltd. Front end loading transit mixer. 4,212,542, Cl. 366-54.000.

Behle, Gunter R., to ACF Industries, Incorporated. Operating handle for bottom operated railway tank car valve. 4,212,447, Cl. 251-98.000.

Behrenz, Wolfgang: *See*—
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.

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Bauer, Hartwig W.; and Ax, Wolfgang, 4,212,650, Cl. 23-230.00B.

Belikin, Alexandr V.: *See*—
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.

Belkevich, Petr I.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.

Belkina, Ljudmila I.: *See*—
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.

Bell, Alexis T.: *See*—
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,212,719, Cl. 204-165.000.

Bell & Howell Company: *See*—
Shum, Edward K.; Martija, Henry M.; and Head, Leon E., 4,213,160, Cl. 360-73.000.

Bell Telephone Laboratories, Incorporated: *See*—
Brohard, Ivan E.; and Freeburg, James R., 4,212,101, Cl. 29-622.000.
Campbell, Joe C.; and Lee, Tien P., 4,213,138, Cl. 357-30.000.
English, Alan T.; and Miller, Gabriel L., 4,213,087, Cl. 324-62.000.
Falconer, David D., 4,213,095, Cl. 375-14.000.
Lawrence, Victor B.; and Mitra, Debasis, 4,213,187, Cl. 364-724.000.
Tsividis, Yannis, 4,213,098, Cl. 330-253.000.

Bellemon, Yves: *See*—
Prunier, Jean-Claude; and Bellemon, Yves, 4,212,514, Cl. 350-96.210.

Bellobono, Ignazio R.: *See*—
Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., 4,212,932, Cl. 429-111.000.

Bemis, John D.; and Goff, Willie, Jr., to International Business Machines Corporation. Impact printer cardholder with integral ribbon guide and end of ribbon sensor. 4,212,552, Cl. 400-249.000.

Benatar, Victor. Pressurized apparatus for discharging powdered reagent from a shipping container. 4,212,331, Cl. 141-67.000.

Bencze, Gyorgy; and Hamori, Andras, to Magyar Tudomanyos Akademia Kozponti Fizikai Kutato Intezete. Holographic subtraction with phase modulation to distinguish phase and amplitude differences. 4,212,536, Cl. 356-71.000.

Bendix Corporation, The: *See*—
Carp, Ralph W.; Weber, Robert E.; and Groff, William R., 4,213,181, Cl. 364-431.000.
Marchak, Roman O.; and Verner, Douglas R., 4,213,180, Cl. 364-431.000.
Melotti, Angelo R., 4,212,277, Cl. 123-343.000.
Schmidt, Charles C., 4,212,202, Cl. 73-304.00C.
Steer, John E., 4,212,411, Cl. 220-347.000.
Tang, Louis S., 4,212,166, Cl. 60-582.000.

Bennethum, Earl W., to Bethlehem Steel Corporation. Rotary drum agglomerating apparatus. 4,212,615, Cl. 425-222.000.

Bennett, Richard N., to National Instrument Company, Inc. Fine tune adjusting mechanism for tandem-operated filling units of a filling machine. 4,212,416, Cl. 222-267.000.

Benninger, Siegfried; and Schmidt, Adolf, to Hoechst Aktiengesellschaft. Process for reducing losses of mercury in alkali metal chloride electrolysis. 4,212,715, Cl. 204-99.000.

Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M. Device for granulometric analysis of particles in fluids. 4,212,539, Cl. 356-336.000.

Berezuk, Peter D.: *See*—
Wolinski, Leon E.; and Berezuk, Peter D., 4,212,921, Cl. 428-414.000.

Bergmeyer, Hans U.: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.

Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, to Hoechst Aktiengesellschaft. Equipment for regulating, monitoring, optimizing and operating, and for displaying data in, alkali metal chloride electrolysis plants. 4,212,721, Cl. 204-219.000.

Bergstrom, Bert: *See*—
Andersson, Allan; and Bergstrom, Bert, 4,212,569, Cl. 408-59.000.

Bernardi, Sergio: *See*—
Scattolin, Antonio; and Bernardi, Sergio, 4,213,172, Cl. 362-413.000.

Bernardin, Jacques A. N.; and Pechmeze, Jacques P. E., to Produits Chimiques Ugine Kuhlmann. Water-insoluble azo dyestuffs which are derivatives of 1-aryl-3-trifluoromethyl-5-pyrazolones. 4,212,647, Cl. 8-662.000.

Bernt, Erich: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.

Bersano, Terenzio. Twin-screw, two-stage and multi-stage extruder having a double feed. 4,212,543, Cl. 366-85.000.

Berti, Marisa: *See*—
Cricchio, Renato; and Berti, Marisa, 4,212,873, Cl. 424-270.000.

Bertrand, Marcel J.: *See*—
van der Burg, Sjirk; Grosch, Karl A.; and Bertrand, Marcel J., 4,212,340, Cl. 152-355.000.

Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, to Stein Industrie; and Electricite de France. Connection between parallel tubular components of a cyclone separator. 4,212,658, Cl. 55-347.000.

Bethlehem Steel Corporation: *See*—
Bennethum, Earl W., 4,212,615, Cl. 425-222.000.

Beuscher, Clinton J.: *See*—
Tosswill, Christopher H.; and Beuscher, Clinton J., 4,212,707, Cl. 204-26.000.

Beuyukian, Charles S.: *See*—
United States of America, National Aeronautics and Space Administration; Beuyukian, Charles S.; Heisman, Robert M.; Haynie, Cyrus C.; and Ruppe, Emil P., 4,212,690, Cl. 148-131.000.

Bevz, Anatoly N.: *See*—
Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.

Beyens, Jozef, to Konstruktie J. Lambrechts p.v.b.a. Liquid dispensing head with rinsing fluid inlet and installation. 4,212,414, Cl. 222-148.000.

Beyer, Horst: *See*—
Buran, Ulrich; and Beyer, Horst, 4,212,602, Cl. 418-178.000.

Beyersdorf, Hartwig. Ionization fire-signal device. 4,213,046, Cl. 250-381.000.

Bianchi, John E. Shoulder holster with improved shoulder strap arrangement. 4,212,418, Cl. 224-206.000.

Bikle, Paul F.; and Montoya, Lawrence C., to United States of America, National Aeronautics and Space Administration. System for use in conducting wake investigation for a wing in flight. 4,212,199, Cl. 73-861.660.

Billet, Rene, to Societe Anonyme Francaise du Ferodo. Torsion damping assembly for friction clutches. 4,212,380, Cl. 192-106.200.

Bindin, Peter J.: *See*—
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.

Bingham, Mary E.: *See*—
Phillips, Kenneth G.; and Bingham, Mary E., 4,212,784, Cl. 260-29.6WQ.

Binks Manufacturing Company: *See*—
Lamontagne, Robert E.; and Scull, Jon V., 4,212,591, Cl. 417-38.000.

Binsack, Rudolf: *See*—
Lehr, Gunter; and Binsack, Rudolf, 4,212,963, Cl. 528-272.000.

Bippus, Jacob R., to Rockwell International Corporation. Anti-kickback device. 4,212,214, Cl. 83-102.100.

Birjulev, Alexei V.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Birrell, Raymond N.; and Royle, Norman E., to Ciba-Geigy (UK) Limited. Process for producing polymaleic anhydride. 4,212,788, Cl. 260-33.6UA.

Birt, David R., to Communications Patents Limited. Circuit for detecting and controlling simultaneous conduction of two switches connected in series. 4,213,103, Cl. 332-9.00T.

Bizilia, George. Foot holding device for use in performing sit-up exercises. 4,212,458, Cl. 272-93.000.

Bjarsch, Otto, to Bosch-Siemens Hausgerate GmbH. Electric toaster. 4,213,033, Cl. 219-385.000.

Blain, William A.: *See*—
Bagdan, Henry J.; and Blain, William A., 4,212,617, Cl. 425-311.000.

Blair, Thomas O. Apparatus for setting fabric loops. 4,212,698, Cl. 156-378.000.

Blanpain, Guy; and Grandfils, Pierre, to Charbonnages de France. Device for causing translation of a tracked machine. 4,212,362, Cl. 180-6.480.

Blaskowski, Henry J., to Combustion Engineering, Inc. Combined cycle power plant using low Btu gas. 4,212,160, Cl. 60-39.120.

Blattler, Joseph F. Pipe expander. 4,212,186, Cl. 72-393.000.

Bliemeister, Robert M.: *See*—
Conrad, Ralph M.; and Bliemeister, Robert M., 4,212,632, Cl. 432-115.000.

Bliznjuk, Alexandr N.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; by Chudova, Ljudmila A., administrator; and by Chudov, Vladimir L., administrator. O,O-Diaryl-1-acyloxy-2,2,2-trichloroethylphosphonates and fungicides based thereon. 4,212,862, Cl. 424-212.000.

Board of Reagents, for and on behalf of the University of Florida: *See*—
Tsibris, John C. M., 4,212,905, Cl. 427-221.000.

Boatwright, William H., to Westvaco Corporation. Recovery furnace safety system. 4,212,628, Cl. 432-4.000.

Bobrick Corporation, The: *See*—
Walker, Randall B., 4,212,434, Cl. 242-55.200.

Bockelmann, Manfred. Separation of materials. 4,212,397, Cl. 209-589.000.

Bodlaj, Viktor, to Siemens Aktiengesellschaft. Device for contact-free measuring of the distance of a surface of an object from a reference plane. 4,212,534, Cl. 356-1.000.

Boehme, Robert E.; and Murphy, Clarence R., to Champion International Corporation; and Gulf Oil Corporation. Apparatus and process for the manufacture of fibrils. 4,212,848, Cl. 422-267.000.

Boehringer Ingelheim GmbH: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.

Boehringer Mannheim GmbH: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.
Werner, Wolfgang; and Rittersdorf, Walter, 4,212,844, Cl. 422-56.000.

Boeing Company, The: *See*—
Pinckney, Robert L., 4,212,491, Cl. 295-11.000.
Pinson, George T., 4,212,188, Cl. 72-413.000.
Stephan, Leonard P., 4,212,444, Cl. 244-182.000.

Boers, Martinus W. A.: *See*—
Schrijvers, Joost E.; and Boers, Martinus W. A., 4,213,055, Cl. 250-483.000.

Boesch, Roger, to Philagro. 2-Cyano-5-substituted 1,3,4-oxadiazoles and fungicidal compositions containing them. 4,212,867, Cl. 424-263.000.

Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, to Lindemann Maschinenfabrik GmbH. Comminuting machine and housing with a rotor journalled in the housing and a tool connected to the housing. 4,212,432, Cl. 241-285.00B.

Bonar, Kermit M., to Dresser Industries, Inc. Method of making magnesite grain. 4,212,679, Cl. 106-57.000.

Bones, Roger J.: *See*—
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.

Borg Instruments Inc.: *See*—
Frey, LaVerne L., 4,212,157, Cl. 368-87.000.

Borg-Warner Corporation: *See*—
Falk, John C., 4,212,958, Cl. 525-310.000.

Borgen, Sverre M.: *See*—
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.

Borglum, Gerald B., to Miles Laboratories, Inc. Production of bacterial cell aggregate. 4,212,943, Cl. 435-180.000.

Borowski, Karl-Heinz; and Honke, Heinrich, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH. Liquid discharge apparatus for a shearing-loader type mining machine. 4,212,497, Cl. 299-53.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Bjarsch, Otto, 4,213,033, Cl. 219-385.000.
Farber, Karl-Heinz, 4,213,031, Cl. 219-244.000.

Bosio, Roberto. Device for producing an artificial blood circulation. 4,212,589, Cl. 417-12.000.

Bosse, Frank; and Lage, Karl-Heinz, to Windmoller & Holscher. Method of reinforcing flattened tubular film with tape layers. 4,212,695, Cl. 156-188.000.

Boswell, George A., Jr., to Du Pont de Nemours, E. I., and Company. Preparation of vinylene fluorides. 4,212,815, Cl. 260-397.200.

Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., to Chicago Bridge & Iron Company. Power producing dry-type cooling system. 4,212,168, Cl. 60-661.000.

Bourne, John B.: *See*—
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.

Bourrinet, Francis: *See*—
Policand, Gerard; Trompette, Jacques; and Bourrinet, Francis, 4,213,101, Cl. 331-78.000.

Bova, Anthony J. Waterbed filling unit. 4,212,335, Cl. 141-382.000.

Bowerman, Paul D.: *See*—
Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., 4,212,849, Cl. 423-10.000.

Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., to BRS, Inc. Track shoes having straight last and improved spike placement. 4,212,120, Cl. 36-129.000.

Boyd, Edward S., to Rockwell International Corporation. Variable heat transfer device. 4,212,346, Cl. 165-32.000.

Brader, Walter H., Jr.: *See*—
Marquis, Edward T.; and Brader, Walter H., Jr., 4,212,821, Cl. 260-570.00D.

Brady, Donnie G., to Phillips Petroleum Company. Laminate using a poly(arylene sulfide)-polytetrafluoroethylene adhesive. 4,212,923, Cl. 428-419.000.

Bragg, Robert C., Jr.; and Hawley, John T., to American Optical Corporation. Jacking screw type fastener. 4,212,224, Cl. 85-1.00K.

Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., to Allen-Bradley Company. Electrical resistor element and method of manufacturing the same. 4,213,113, Cl. 338-309.000.

Brandwein, Arthur. Tape splicing device and dispenser therefor. 4,212,694, Cl. 156-184.000.

Braner Enterprises, Inc.: *See*—
Braner, Harold R.; and Matsunaga, Douglas S., 4,212,218, Cl. 83-479.000.

Braner, Harold R.; and Matsunaga, Douglas S., to Braner Enterprises, Inc. Slitter having liftable pivoted multiple spaced pairs of arbors. 4,212,218, Cl. 83-479.000.

Brans, Bernhard: *See*—
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.

Braunschweiler, Hans-Georg, to Georg Fischer Brugg - Oehler AG. Apparatus for assembling planar work pieces. 4,212,699, Cl. 156-558.000.

Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., to Standard Oil Company. Process for forming multi-component oxide complex catalysts. 4,212,766, Cl. 252-432.000.

Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Electro-mechanical filter. 4,213,107, Cl. 333-197.000.

Brennan, Michael P. J.: *See*—
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.

Brereton, Paul A.; and Challis, Roger, to Triplex Safety Glass Company Limited. Method of heating glass sheets for conveying. 4,212,662, Cl. 65-106.000.

Bretschneider, Erich, to Schloemann-Siemag Aktiengesellschaft. Rolling mill. 4,212,178, Cl. 72-97.000.

Brewer, Robert L.: *See*—
Shumate, Billy R., 4,212,129, Cl. 43-113.000.

Brewing Patents Limited: *See*—
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.

Bridge, Adam P.: *See*—
Babington, William M., Jr.; and Bridge, Adam P., 4,212,705, Cl. 162-238.000.

Bridgestone Tire Company Limited: *See*—
Yamamoto, Megumi, 4,212,328, Cl. 138-138.000.

Bristol-Myers Company: *See*—
McKenzie, Robert T., 4,212,392, Cl. 206-571.000.

Brockmann, Klaus-Dieter K.; and Dijkmans, Eise C., to U.S. Philips Corporation. Arrangement for measuring the line condition of a subscriber's line circuit by means of a measuring resistor. 4,213,016, Cl. 179-175.30R.

Brohard, Ivan E.; and Freeburg, James R., to Bell Telephone Laboratories, Incorporated. Method for adjusting piezoelectric relay operating gaps. 4,212,101, Cl. 29-622.000.

Brokamp, Hans J. B. Modular planting box system including liquid level and insert. 4,212,134, Cl. 47-82.000.

Bromberg, Michael A.: *See*—
Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., 4,213,174, Cl. 364-104.000.

Brooks, George C.; and Brown, James R. Apparatus for separating and classifying diverse, liquid-suspended solids. 4,212,730, Cl. 209-168.000.

Brooks, Hubert C.; and Stroh, Alan E., to Essex Group, Inc. Electrical connector assembly. 4,212,509, Cl. 339-95.00D.

Brosse, Jean-Claude: *See*—
Pinazzi, Christian; Lenain, Jean-Claude; and Brosse, Jean-Claude, 4,212,718, Cl. 204-159.230.

Brothers, J. Alfred: *See*—
Chahine, M. Helmy; and Brothers, J. Alfred, 4,212,892, Cl. 426-289.000.

Brower, Ronald W., to NCR Corporation. CISFET Processing including simultaneous doping of silicon components and FET channels. 4,212,684, Cl. 148-1.500.

Brown, Arthur V., Jr.; and Karrasch, Richard J., to Jim Dandy Company, The. Molasses-containing animal feed having resilient structure. 4,212,896, Cl. 426-623.000.

Brown, Claire L.: *See*—
Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., 4,213,183, Cl. 364-507.000.

Brown, Craig K., to United States of America, Navy. Hydrophone preamplifier and calibration circuit. 4,213,099, Cl. 330-297.000.

Brown, James R.: *See*—
Brooks, George C.; and Brown, James R., 4,212,730, Cl. 209-168.000.

Brown & Root, Inc.: *See*—
Maybury, Richard W., 4,212,248, Cl. 104-138.00G.
Weidler, Jay B.; Gracia, Bert E.; and Hull, Tommy L., 4,212,563, Cl. 405-195.000.

Brown, William F., to Wausau Homes, Inc. Fireproof barrier coating compositions. 4,212,909, Cl. 427-393.500.

Brownlee, J. O. Agricultural machine. 4,212,148, Cl. 56-328.00R.

BRS, Inc.: *See*—
Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., 4,212,120, Cl. 36-129.000.

Brubaker, Gaylen R.; and Scholer, Fred R., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,212,757, Cl. 252-95.000.

Bruckner, Willy: *See*—
Weidlich, Dieter H.; and Bruckner, Willy, 4,212,610, Cl. 425-110.000.

Brumfield, Robert C. Blood processing apparatus. 4,212,741, Cl. 210-241.000.

Bruns, Klaus: *See*—
Schaper, Ulf-Armin; and Bruns, Klaus, 4,212,773, Cl. 252-522.00R.

Brusq, Roger: *See*—
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.

Bubik, Leslie, to Vulcan Equipment Company Limited. Vehicle hoist. 4,212,374, Cl. 187-8.430.

Buchanan, James E., to Westinghouse Electric Corp. CCD Digital-to-analog converter. 4,213,120, Cl. 340-347.0DA.

Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, to Jagenberg Werke AG. Labeling station. 4,212,700, Cl. 156-568.000.

Buchsteiner, Renate, to Johannes Buchsteiner GmbH & Co KG. Stand for holding utensils to be dried. 4,212,400, Cl. 211-41.000.

Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Bis-phthalimides. 4,212,805, Cl. 260-326.00N.

Buczkowski, Fred E.: *See*—
Payne, Robert D.; Buczkowski, Fred E.; and Szpitalak, Wesley J., 4,212,266, Cl. 118-712.000.

Bulankin, Rudolf P.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Bunker Ramo Corporation: *See*—
Perna, Jiulio E.; and Mache, Gerhard R., 4,213,013, Cl. 179-98.000.

Bunker, Richard D.: *See*—
Durand, Harry W.; and Bunker, Richard D., 4,212,704, Cl. 162-175.000.

Bunnell, Edward D., to AMP Incorporated. Selective interconnection system and connector. 4,212,507, Cl. 339-18.00B.

Buran, Ulrich; and Beyer, Horst, to Goetzewerke Friedrich Goetze AG. Wear-resistant coating for sealing strips in rotary engines. 4,212,602, Cl. 418-178.000.

Burgess, William F., to Thomas Hill (Rotherham) Limited. Mine locomotive. 4,212,250, Cl. 105-50.000.

Burke, Timothy R.: *See*—
Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., 4,212,756, Cl. 252-63.200.

Burkett, William E., to James River Hydrate & Supply Co., Inc. Process and apparatus for producing an aggregate material from bottom ash. 4,212,682, Cl. 106-288.00B.

Burklin, Max: *See*—
Dreher, Ernst; Wolf, Richard; and Burklin, Max, 4,212,370, Cl. 181-230.000.

Burlington Industries, Inc.: *See*—
Roman, Alfred R., 4,212,152, Cl. 57-207.000.

Burroughs Corporation: *See*—
Drinkard, John H., Jr., 4,212,102, Cl. 29-741.000.
Wisner, Daniel A.; and Schmalzriedt, Truman T., 4,213,082, Cl. 323-17.000.

Burtsev, Vladimir M.: *See*—
Smolko, Gennady G.; Akushsky, Izrail Y.; and Burtsev, Vladimir M., 4,213,188, Cl. 364-739.000.

Buss, Robert R.: *See*—
West, Perry C.; and Buss, Robert R., 4,212,205, Cl. 73-579.000.

Butler, Donald E., to Warner-Lambert Company. 5-Phenoxy-2-pyridinecarbonitrile compounds and methods for their production. 4,212,980, Cl. 546-288.000.

Butler, J. R.: *See*—
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.

Butler, L. Dennis, to Sperry Corporation. Apparatus for retaining bales in position on a bale wagon. 4,212,578, Cl. 414-39.000.

Buxton, Howard D., to Motorola, Inc. Tinning apparatus for multiple solder surfaces. 4,212,265, Cl. 118-700.000.

Buys, Bruno, to Astec. Apparatus for cutting a tube of semi-rigid material. 4,212,215, Cl. 83-109.000.

Buyze. Allan W.: *See*—
Glovak, Danny W.; and Buyze, Allan W., 4,212,462, Cl. 273-424.000.

Byer, Robert L.; and Herbst, Richard L., to Leland Stanford University, The Board of Trustees of. Tunable infrared source employing Raman mixing. 4,213,060, Cl. 307-426.000.

Bykhovsky, David G.; and Voropaev, Albert A., to Vsesojuzny Nauchno-Isledovatelsky Proektno-Konstruktorsky i Teknologichesky Institut Elektrosvarochnogo Oborudovania. Method of treating electrodes intended for operation in argon as cathodes of an electric arc. 4,213,027, Cl. 219-75.000.

C. A. Pemberton & Co.: *See*—
Heppner, John B., 4,212,217, Cl. 83-277.000.

Cadart, Francois; and Pflieger, Bernard, to Compagnie Generale des Etablissements Michelin. Arrangement comprising a compartment and a conduit. 4,212,931, Cl. 429-104.000.

Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., to American Atomics Corporation. Miniature radioactive light source and method of its manufacture. 4,213,052, Cl. 250-462.000.

Cagan, Bernard J.; and McQuary, Kenneth L., to Placo Products Company. Dart gun and dart therefor. 4,212,285, Cl. 124-67.000.

Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., to Societe' Nazionale Industria Applicazioni Viscosa S.p.A. (Snia Viscosa). Device for the direct conversion of radiant energy to electrical energy. 4,212,932, Cl. 429-111.000.

California Institute of Technology: *See*—
United States of America, National Aeronautics and Space Administration; and Humphrey, Marshall F., 4,212,732, Cl. 210-32.000.

Cameron, Eugene A. Digitizer tablet. 4,213,005, Cl. 178-18.000.

Camloc Fastener GmbH: *See*—
Weidlich, Dieter H.; and Bruckner, Willy, 4,212,610, Cl. 425-110.000.

Campbell, George T. R.; and Morioke, Yukitoshi, to Algoship International Limited. Device for lifting crane boom. 4,212,404, Cl. 212-238.000.

Campbell, Joe C.; and Lee, Tien P., to Bell Telephone Laboratories, Incorporated. Demultiplexing photodetector. 4,213,138, Cl. 357-30.000.

Campbell, Robert W., to Phillips Petroleum Company. Normally solid, moldable polyamide from branched chain diamine and aliphatic dicarboxylic acid. 4,212,964, Cl. 528-340.000.

Campbell, Robert W., to Phillips Petroleum Company. Polyamides with elastomeric character from 5-methylnonamethylene diamine. 4,212,965, Cl. 528-340.000.

Canadian Patents & Development Ltd.: *See*—
Sanders, Corey L.; and Makow, David M., 4,212,535, Cl. 356-51.000.

Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., to International Business Machines Corporation. Method of modifying the development profile of photoresists. 4,212,935, Cl. 430-326.000.

Canon Kabushiki Kaisha: *See*—
Imataki, Hiroyuki; Kobayashi, Masatsune; and Ohta, Tokuya, 4,212,518, Cl. 350-357.000.
Knechtel, Wilhelm; and Tokiwa, Taisuke, 4,212,264, Cl. 118-653.000.

Cante, Charles J.: *See*—
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

Caraway, Guy C., deceased; and by Caraway, Virginia M., executrix. Centrifugal wet gas scrubbing method and apparatus. 4,212,654, Cl. 55-91.000.

Caraway, Virginia M., executrix: *See*—
Caraway, Guy C., deceased; and Caraway, Virginia M., executrix, 4,212,654, Cl. 55-91.000.

Carlson, Elmer T. Bus conduit electrical distribution system. 4,213,003, Cl. 174-88.00B.

Caron, Bernard G.: *See*—
Barber, Donald L., Jr.; and Caron, Bernard G., 4,212,413, Cl. 222-1.000.

Carp, Ralph W.; Weber, Robert E.; and Groff, William R., to Bendix Corporation, The. Energy dissipation circuit for electromagnetic injection. 4,213,181, Cl. 364-431.000.

Carrier Corporation: *See*—
Alman, Donald W.; Gerwitz, Paul F.; and Tygard, Charles M., 4,213,112, Cl. 338-183.000.

Carrigan, Erwin R.: *See*—
Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., 4,212,502, Cl. 308-3.00R.

Carroll, Michael H.; Taylor, Richard J.; and McCubbin, Peter J., to General Signal Corporation. Discriminating means for telephone circuits. 4,213,012, Cl. 179-84.00R.

Carson, Chrislyn M.; Ehr, Robert J.; and Rogers, Richard B., to Dow Chemical Company, The. Substituted 1-pyridinyloxy-1-(imidazolyl)-2-butanone compounds and their use as fungicides. 4,212,869, Cl. 424-263.000.

Carter, Anthony F.: *See*—
Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.

Casad, Burton M.: *See*—
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.

Caterpillar Tractor Co.: *See*—
Peterson, Laurel L.; and Hickman, Alan J., 4,212,375, Cl. 187-9.00R.
Ruseff, Walter Z., 4,212,596, Cl. 417-216.000.
Shoup, Stephen G., 4,212,139, Cl. 52-721.000.

Cattaneo, Filippo; and Corolla, Rosolino, to Innocenti Santeustacchio S.p.A. Device for controlling the rotation of the working rollers in a tube rolling mill. 4,212,180, Cl. 72-249.000.

Cecil, Howard E.: *See*—
Kutik, Louis F.; and Cecil, Howard E., 4,212,332, Cl. 141-98.000.

Cecka, Andrew M.; and Pawling, Paul G., to Fansteel Inc. Composite high strength to weight structure having shell and weight controlled core. 4,212,461, Cl. 273-73.00F.

Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, to Pfizer Inc. Process for producing nocardicin A. 4,212,944, Cl. 435-121.000.

Celotex Corporation, The: *See*—
Skowronski, Michael J.; and DeLeon, Alberto, 4,212,917, Cl. 428-310.000.

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Simeonov, Yordan T.; and Djabarov, Nikola B., 4,212,681, Cl. 106-89.000.

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Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.

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Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.

Chadwick, Duane G., to Utah State University Foundation. Heat-powered water pump. 4,212,593, Cl. 417-53.000.

Chahine, M. Helmy; and Brothers, J. Alfred, to Nova Scotia Research Foundation Corporation. Method of preparing a high-protein snack food. 4,212,892, Cl. 426-289.000.
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Brereton, Paul A.; and Challis, Roger, 4,212,662, Cl. 65-106.000.
Champion International Corporation: *See—*
Boehme, Robert E.; and Murphy, Clarence R., 4,212,848, Cl. 422-267.000.
Korte, Ralph J., 4,212,395, Cl. 206-611.000.
Schillinger, Joseph F., 4,212,391, Cl. 206-434.000.
Chandler, Arthur R.; and Moody, Victor, to Weatherford/Lamb, Inc. Rotary drive apparatus. 4,212,212, Cl. 81-57.170.
Chang, Jaw-Kang: *See—*
Hanlon, Brenton G. A.; Chang, Jaw-Kang; and Fong, Bosco T. W., 4,212,797, Cl. 260-112.50R.
Chapman, Paul W., to Sanders Associates, Inc. Aquaculture habitat. 4,212,268, Cl. 119-2.000.
Charbonnages de France: *See—*
Blanpain, Guy; and Grandfils, Pierre, 4,212,362, Cl. 180-6.480.
Charles Stark Draper Laboratory, Inc., The: *See—*
Matson, Leslie E., Jr., 4,213,200, Cl. 367-117.000.
Chaumont, Gerard P. L., to Sperry Corporation. Deflector means for mower-conditioner. 4,212,143, Cl. 56-14.400.
Chemische Werke Huls A.G.: *See—*
Turck, Ulrich, 4,212,785, Cl. 260-29.70H.
Chen, Chun-Fu, to University of Akron, The. Circuit and method for the recorder display of high frequency periodic signals. 4,213,134, Cl. 346-1.100.
Chernyshev, Valery P.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Cherry, Donald G.: *See—*
Young, David W.; and Cherry, Donald G., 4,212,759, Cl. 252-119.000.
Chesher, Keith, to Pye (Electronics Products) Limited. Load measuring arrangements for fork lift trucks or the like. 4,212,360, Cl. 177-139.000.
Chibnik, Sheldon, to Mobil Oil Corporation. Chelate detergent and antiwear additive for lubricants derived from hydroxyalkylated benzotriazoles. 4,212,754, Cl. 252-49.700.
Chicago Bridge & Iron Company: *See—*
Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., 4,212,168, Cl. 60-661.000.
Chimura, Kozo: *See—*
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,212,155, Cl. 368-250.000.
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., to Racal-Milgo, Inc. Hybrid automatic gain control circuit. 4,213,097, Cl. 330-51.000.
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Fukui, Suguru, 4,212,853, Cl. 423-235.000.
Chloride Group Limited: *See—*
Rock, Alan, 4,213,080, Cl. 320-21.000.
Chloride Silent Power Limited: *See—*
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.
Choi, Mansam, to Anthony Manufacturing Corp. Protective housing for irrigation sprinklers. 4,212,426, Cl. 239-230.000.
Chou, Ta-Sen, to Eli Lilly and Company. Process for preparing N-chloroimides. 4,212,977, Cl. 546-243.000.
Choulet, Jean-Claude; and Laily, Andre, to Rhone-Poulenc Industries. Single-stage process for the preparation of terephthalic acid. 4,212,991, Cl. 562-480.000.
Christensen, Alton O., Sr. Electron beam accessed read-write-erase random access memory. 4,213,192, Cl. 365-118.000.
Chromalloy Electronics Corporation: *See—*
Genest, Leonard J.; and Madenlian, Vache B., 4,213,118, Cl. 340-149.00R.
Chrysler Corporation: *See—*
Warmbold, Helmut, 4,212,318, Cl. 137-590.000.
Chudov, Lev N., deceased: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Chudov, Vladimir L., administrator: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Chudova, Ljudmila A., administrator: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Chyung, Kenneth; and Megles, John E., Jr., to Corning Glass Works. Rapidly crystallized beta-spodumene glass-ceramic materials. 4,212,678, Cl. 106-39.700.
Ciaccio, Leonard L., to Novo Laboratories, Inc. Method and composition for cleaning dairy equipment. 4,212,761, Cl. 252-174.120.
Ciba-Geigy AG: *See—*
Della Casa, Angelo; and Karlen, Urs, 4,212,642, Cl. 8-470.000.
Kolliker, Hans P., 4,212,643, Cl. 8-470.000.
Ciba-Geigy Corporation: *See—*
Fringeli, Werner, 4,212,763, Cl. 252-301.230.
Gschwend, Heinz W.; and Huebner, Charles F., 4,212,808, Cl. 260-340.300.
Ciba-Geigy (UK) Limited: *See—*
Birrell, Raymond N.; and Royle, Norman E., 4,212,788, Cl. 260-33.6UA.
Cities Service Company: *See—*
LaDelfa, Christopher J.; and Greene, Marvin, 4,212,112, Cl. 34-9.000.
Citizen Watch Co., Ltd.: *See—*
Tamaru, Munetaka, 4,212,158, Cl. 368-80.000.
Clark, John H.: *See—*
Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., 4,212,717, Cl. 204-158.00R.
Clark, Michael T.; and ten Haken, Pieter, to Shell Oil Company. Certain fungicidal pyridinecarbaldehyde phenylhydrazones. 4,212,868, Cl. 424-263.000.
Clark, Raymond D., to Eastman Kodak Company. Preparation of cyclopentane-1,1-diacetic acid and intermediate. 4,212,973, Cl. 546-16.000.
Clarke, Geoffrey C.: *See—*
Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., 4,212,259, Cl. 115-73.000.
Clemens, Jon K., to RCA Corporation. Recording/playback apparatus using a single pilot tone for active tracking and control of a video disc pickup device. 4,213,148, Cl. 358-128.600.
Clements, Boyd D.; Hines, Charles E.; and Kubat, James J., to Outboard Marine Corporation. Turf aerating device. 4,212,357, Cl. 172-22.000.
Cliff, George S.; and Willocks, Jack, to Imperical Chemical Industries Limited. Extrusion apparatus and method for extruding abrasive pastes. 4,212,840, Cl. 264-338.000.
Cline, Quentin E.; and Floyd, Paul D., to Virginia Panel Corporation. Computer interface receiver retrofit kit. 4,212,508, Cl. 339-18.00B.
Coal Industry (Patents) Limited: *See—*
Williams, Morgan J., 4,212,382, Cl. 198-502.000.
Coates, John S., to Du Pont de Nemours, E. I., and Company. Reducing color formers in 1,4-butanediol. 4,213,000, Cl. 568-861.000.
Cochard, Michel, to Vibro-Meter SA. Vibration monitoring system for an aircraft engine. 4,213,114, Cl. 340-27.00R.
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., to General Electric Company. Electrolysis of alkali metal halides in a three compartment cell with self-pressurized buffer compartment. 4,212,714, Cl. 204-98.000.
Cole, Lanier G., to United States of America, Air Force. Doubly adaptive CFAR apparatus. 4,213,127, Cl. 343-5.0CF.
Colgate-Palmolive Company: *See—*
Karami, Hamzeh, 4,212,302, Cl. 128-287.000.
Collins, H. Dale, to International Submarine Services, S.A. Underwater apparatus for acoustically inspecting a submerged object. 4,212,258, Cl. 114-312.000.
Colussi, Elio J., to Solid State Scientific Inc. Hybrid transistor. 4,213,141, Cl. 357-74.000.
Combustion Engineering, Inc.: *See—*
Blaskowski, Henry J., 4,212,160, Cl. 60-39.120.
Mabery, Thomas L., 4,212,183, Cl. 72-318.000.
Commissariat a l'Energie Atomique: *See—*
Rigny, Paul, 4,212,716, Cl. 204-157.10R.
Communications Patents Limited: *See—*
Birt, David R., 4,213,103, Cl. 332-9.00T.
Compagnie Generale d'Appareillage Electrique C.G.A.E.: *See—*
Marcoz, Bruno, 4,213,109, Cl. 335-174.000.
Compagnie Generale de Radiologie: *See—*
Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, 4,213,048, Cl. 250-402.000.
Compagnie Generale des Etablissements Michelin: *See—*
Cadart, Francois; and Pflieger, Bernard, 4,212,931, Cl. 429-104.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.
Compak Systems Inc.: *See—*
Penick, Ib; and Volkert, John K., 4,212,231, Cl. 93-1.00F.

Componentry Research & Development Enterprises, Inc.: *See*—
Zakow, Gilbert, 4,212,175, Cl. 70-58.000.
Concast AG: *See*—
Linder, Sten; and Spijkerman, Johan, 4,212,342, Cl. 164-4.000.
Concord Laboratories, Inc.: *See*—
Raitto, Russell G., 4,212,307, Cl. 128-763.000.
Congoleum Corporation: *See*—
Potosky, Milton J.; and Rohrbacher, Peter J., 4,212,691, Cl. 156-79.000.
Conley, Dell: *See*—
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.
Conner, Charles C. Electronically actuated electric switch. 4,213,061, Cl. 307-116.000.
Conoco, Inc.: *See*—
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.
Conrad, Ralph M.; and Bliemeister, Robert M., to Allis-Chalmers Corporation. Cooling arrangement for rotary kiln. 4,212,632, Cl. 432-115.000.
Conradi, Joseph J., to Shell Oil Company. Ultrasonic tube inspection. 4,212,207, Cl. 73-623.000.
Conroy, Reid A.: *See*—
Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., 4,212,153, Cl. 368-62.000.
Continental Group, Inc., The: *See*—
Miller, Donald E., 4,212,185, Cl. 72-354.000.
Payne, Robert D.; Buczkowski, Fred E.; and Szpitalak, Wesley J., 4,212,266, Cl. 118-712.000.
Continental Gummi-Werke Aktiengesellschaft: *See*—
Tiemann, Reinhard, 4,212,338, Cl. 152-158.000.
Cook, Martin E. Anti-runout device and conveyor apparatus. 4,212,381, Cl. 193-40.000.
Cook, Richard L. Fitting for flexible walled receptacle. 4,212,488, Cl. 285-200.000.
Cooper, Paul J., to NCR Corporation. System and method for increasing the output data throughput of a computer. 4,213,176, Cl. 364-200.000.
Cooper, Paul V., to Plessey Handel und Investments AG. Method and apparatus for testing a magnetic domain device. 4,213,091, Cl. 324-210.000.
Cooperstein, Gerald: *See*—
Mahaffey, Redge A.; Goldstein, Shyke A.; Golden, Jeffry; and Cooperstein, Gerald, 4,213,073, Cl. 313-310.000.
Coover, Stephen R.; and Reist, Parker C., to Research Triangle Institute. Acoustical particle detector and method. 4,212,190, Cl. 73-28.000.
Coppola, Gary M., to Sandoz, Inc. Process for the preparation of optionally substituted 2,3-indolinediones. 4,212,804, Cl. 260-325.00R.
Corazzari, Canzio: *See*—
Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, 4,212,967, Cl. 528-500.000.
Cornelius, Lammert, to Akzo N.V. Highly concentrated pharmaceutical formulations of steroids and processes for their preparation. 4,212,863, Cl. 424-240.000.
Corning Glass Works: *See*—
Aslami, Mohd A., 4,212,663, Cl. 65-144.000.
Barber, Donald L., Jr.; and Caron, Bernard G., 4,212,413, Cl. 222-1.000.
Chyung, Kenneth; and Megles, John E., Jr., 4,212,678, Cl. 106-39.700.
Hoda, Syed N., 4,212,919, Cl. 428-410.000.
Maurer, Robert D., 4,212,660, Cl. 65-3.00A.
Wu, Shy-Hsien, 4,212,836, Cl. 264-1.000.
Corolla, Rosolino: *See*—
Cattaneo, Filippo; and Corolla, Rosolino, 4,212,180, Cl. 72-249.000.
Correll, Curtis V., Sr.; and West, William F. Munition arming device. 4,212,225, Cl. 89-1.50D.
Cosden Technology, Inc.: *See*—
Mayes, Warden W., 4,212,726, Cl. 208-101.000.
Costley, Eugene J., to JDC Welding and Research, Inc. Butt welding process. 4,213,024, Cl. 219-61.000.
Crane Packing Co.: *See*—
Sedy, Josef, 4,212,475, Cl. 277-96.100.
Cricchio, Renato; and Berti, Marisa, to Gruppo Lepetit S.p.A. 4-Desoxy-thiazolo[5,4-c]rifamycin derivatives and their use as antimicrobial agents. 4,212,873, Cl. 424-270.000.
Crosby, Michael J. Orifice plate mixer and method of use. 4,212,544, Cl. 366-150.000.
Crouse-Hinds Company: *See*—
Piston, Thomas P., 4,213,018, Cl. 200-51.120.
Cullen, Donald E.; and Wagner, Robert A., to United Technologies Corporation. Vacuum encapsulation for surface acoustic wave (SAW) devices. 4,213,104, Cl. 333-150.000.
Cumming, James M.; and Saurenman, Donald G. Planar gas and ion distribution. 4,213,167, Cl. 361-213.000.
Cupples, Barrett L.: *See*—
Madgavkar, Ajay M.; Swift, Harold E.; and Cupples, Barrett L., 4,213,001, Cl. 585-510.000.
Curry, Paul F. Articulating mine car coupling. 4,212,365, Cl. 180-139.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, to Hoechst Aktiengesellschaft. Process for the printing of mixed fabrics of polyester and cellulose fibers. 4,212,646, Cl. 8-532.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, to Hoechst Aktiengesellschaft. Process for the printing of cellulose fiber fabrics, 4,212,648, Cl. 8-466.000.
Cuvelier, Jean-Philippe; and Gistau, Henri, to Societe Miniere et Metallurgique de Penarroya. Method and an apparatus for controlling a crusher. 4,212,429, Cl. 241-26.000.
Dabney, Upton, to Kroehler Mfg. Co. Rocker reclining chair with multi-position rocker lock. 4,212,494, Cl. 297-69.000.
Daigo, Yukitaka: *See*—
Goto, Yuzuru; Daigo, Yukitaka; and Hitotsuyanagi, Mikio, 4,212,733, Cl. 210-36.000.
Daimler-Benz Aktiengesellschaft: *See*—
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, 4,212,545, Cl. 366-152.000.
Zeilinger, Karl, 4,212,369, Cl. 181-224.000.
Dainippon Ink and Chemicals, Inc.: *See*—
Saito, Koukichi; and Suzuki, Nobuo, 4,212,693, Cl. 156-173.000.
Dale, John D.; and Knotter, David G., to Deering Precision Instruments Co. Hand-held pulverizer. 4,212,430, Cl. 241-89.400.
D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, to Anic, S.p.A. Process for the manufacture of laminated sheets of cellulosic and polymeric fibrous materials. 4,212,703, Cl. 162-129.000.
Dana Corporation: *See*—
Overbeek, Robert B., 4,212,557, Cl. 403-1.000.
Danfoss A/S: *See*—
Jespersen, Aksel, 4,213,062, Cl. 307-117.000.
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.
Olsen, Gunnar E. R.; and Iversen, Poul C. C., 4,213,032, Cl. 219-364.000.
Daniel, Chelliah, to Air Products and Chemicals, Inc. Method of preparing an oxidation catalyst containing a molybdate anion. 4,212,767, Cl. 252-435.000.
Daniel, James W., Jr., to RCA Corporation. Phaselock receiver with phaselock detector. 4,213,096, Cl. 455-260.000.
Daniels, Dennis. Power plane for transporting fishing line. 4,212,127, Cl. 43-43.120.
Daniels, Peter J. L.; McCombie, Stuart; and Nagabhushan, Tattanahalli L., to Schering Corporation. 2'-Hydroxy-2'-desamino-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitols, methods for their manufacture, method for their use as antibacterial agents, and compositions useful therefor. 4,212,859, Cl. 424-180.000.
Dardi, Louis E.: *See*—
Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., 4,212,669, Cl. 75-226.000.
Dart Industries Inc.: *See*—
Lahay, Charles A., 4,212,305, Cl. 128-354.000.
Data Card (U.K.) Limited: *See*—
Smith, Colin H. S., 4,213,041, Cl. 235-487.000.
Dataproducts Corporation: *See*—
Edwards, Albert L.; and Arzoumanian, Aram S., 4,212,549, Cl. 400-154.000.
Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, to BASF Aktiengesellschaft. Processes and apparatus for removing suspended matter from suspensions by filtration through foams. 4,212,737, Cl. 210-77.000.
Davidson, Allen R., to Motorola, Inc. Antenna system with multiple frequency inputs. 4,213,132, Cl. 343-854.000.
Davies, John I., to TBA Industrial Products Limited. Coupled glass in rubber modified thermoplastics. 4,212,792, Cl. 260-42.180.
Davies, Terence J.: *See*—
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.
Davis, David J.: *See*—
Taylor, Brian P.; Davis, David J.; and Wasdell, Roy N., 4,212,469, Cl. 274-23.00A.
Davy-Loewy Limited: *See*—
Dunkley, John J., 4,212,736, Cl. 210-73.00R.
Davy Powergas GmbH: *See*—
Kerner, Walter; and Schmitz, Paul, 4,212,855, Cl. 423-522.000.
Davydov, Evgeny F.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Dawson, John M., to TRW Inc. Method for flowing a large volume of plasma through an excitation region. 4,213,043, Cl. 250-283.000.
Day, F. Howard, to Hooker Chemicals & Plastics Corp. Process for the preparation of benzoyl halide and halosulfonylbenzoyl halide. 4,212,819, Cl. 260-543.00R.
Dayco Corporation: *See*—
Haren, Doyle V.; and Edwards, William M., 4,212,327, Cl. 138-125.000.
De Laval Separator Company, The: *See*—
Fuentevilla, Manuel E., 4,212,889, Cl. 426-7.000.
Deacey, Peter, to PDM Electrical Products Ltd. Power switching circuit. 4,213,059, Cl. 307-41.000.
DeBenedictis, Leonard C.; and Starkweather, Gary K., to Xerox Corporation. Self tracking laser scanning apparatus. 4,213,157, Cl. 358-293.000.

DeBenedictis, Leonard C., to Xerox Corporation. Optical data recording system utilizing acoustic pulse imaging to minimize image blur. 4,213,158, Cl. 358-296.000.
de Boer, Eeltje, to U.S. Philips Corporation. Method of modulating a composite color television signal on a carrier signal and device for carrying out said method. 4,213,144, Cl. 358-12.000.
DeCourcy, Charles N. Baking mold assembly. 4,212,234, Cl. 99-426.000.
Deep Oil Technology, Inc.: *See*—
Horton, Edward E., 4,212,329, Cl. 138-155.000.
Deere & Company: *See*—
Dobberpuhl, Dale R., 4,212,364, Cl. 180-19.00R.
Grant, Rodger B., 4,212,427, Cl. 239-676.000.
Stecklein, Gary L., 4,212,582, Cl. 414-694.000.
Deering Precision Instruments Co.: *See*—
Dale, John D.; and Knotter, David G., 4,212,430, Cl. 241-89.400.
deFries, Jan R.: *See*—
Stoll, Kurt; and deFries, Jan R., 4,212,320, Cl. 137-625.600.
Degen, Hans-Juergen; and Grychtol, Klaus, to BASF Aktiengesellschaft. Dyed paper. 4,212,644, Cl. 8-506.000.
Degenhardt, Karl-Heinz; Marx, Gerhard; and Frank, Hermann, to Hoechst Aktiengesellschaft. Arrangement for ammonia feed in copying equipment. 4,212,655, Cl. 55-181.000.
de Jong, Aaldert J.: *See*—
Schadenberg, Hendrik; Leenaars, Corrie M. J.; and de Jong, Aaldert J., 4,212,751, Cl. 252-32.70E.
Delair, Jacques: *See*—
Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, 4,213,048, Cl. 250-402.000.
De Lange, Nicolaas H.: *See*—
Mulder, Willem; Vaessen, Dorotheus C. L.; and De Lange, Nicolaas H., 4,213,126, Cl. 343-5.0SM.
DeLeon, Alberto: *See*—
Skowronski, Michael J.; and DeLeon, Alberto, 4,212,917, Cl. 428-310.000.
Della Casa, Angelo; and Karlen, Urs, to Ciba-Geigy AG. Transfer printing dyes. 4,212,642, Cl. 8-470.000.
del Valle, Leon. Battery operated eyelash curler. 4,212,311, Cl. 132-31.00A.
Demmel, Edward J., to Mobil Oil Corporation. Catalytic cracking of hydrocarbons. 4,212,728, Cl. 208-121.000.
Dempster Industries, Inc.: *See*—
Walker, John H., 4,212,428, Cl. 239-677.000.
Denes, Oscar L.: *See*—
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,213,113, Cl. 338-309.000.
Denka Chemical Corporation: *See*—
Fitzgerald, Kenneth D., 4,212,780, Cl. 260-27.0BB.
den Otter, John J.: *See*—
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.
Derksema, Bram J.: *See*—
Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., 4,213,100, Cl. 331-94.50D.
Design Maintenance Corporation: *See*—
Hill, Duncan E., Jr., 4,212,110, Cl. 33-174.00G.
Deussner, Herbert, to Klockner-Humboldt-Deutz AG. Method for the calcining of lime. 4,212,850, Cl. 423-175.000.
Deutsche Texaco Aktiengesellschaft: *See*—
Grodde, Karl-Heinz; and Schulz, Alfred, 4,212,794, Cl. 260-97.600.
Dhein, Rolf: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Diafil International S.A.: *See*—
Ribi, Valentino, 4,212,481, Cl. 280-276.000.
Dickson, Howard K.: *See*—
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,212,317, Cl. 137-565.000.
Patrick, E. Vincent; and Dickson, Howard K., 4,212,575, Cl. 414-8.000.
Didier-Werke AG: *See*—
Gelsdorf, Gunter; Leupold, Hermann; and Schellberg, Franz, 4,212,926, Cl. 428-472.000.
Di Drusco, Giovanni: *See*—
Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, 4,212,967, Cl. 528-500.000.
Diepers, Heinrich: *See*—
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.
Diesel Kiki Co., Ltd.: *See*—
Ohtani, Yoshio, 4,212,279, Cl. 123-352.000.
Diez, Mark F.; Lewis, David O.; and Robinson, Thomas S., to International Business Machines Corporation. Input/output command timing mechanism. 4,213,178, Cl. 364-200.000.
Dijkmans, Eise C.: *See*—
Brockmann, Klaus-Dieter K.; and Dijkmans, Eise C., 4,213,016, Cl. 179-175.30R.
Dils, Michael A.: *See*—
Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., 4,213,119, Cl. 340-151.000.
DiMartino, John M., to Line Fast Corporation. Key actuated stacker locking device. 4,212,251, Cl. 24-73.00R.
Disteldorf, Josef: *See*—
Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, 4,212,962, Cl. 528-45.000.
Divine, David L., to Texaco Inc. Borehole pressure sensing system. 4,212,198, Cl. 73-151.000.
Djabarov, Nikola B.: *See*—
Simeonov, Yordan T.; and Djabarov, Nikola B., 4,212,681, Cl. 106-89.000.
Dmochowski, Frank M. Rake attachment for garden tool. 4,212,150, Cl. 56-400.060.
Dobberpuhl, Dale R., to Deere & Company. Drive axle support frame for a walk-behind, self-propelled lawn mower. 4,212,364, Cl. 180-19.00R.
Dobson, Robert L., to Goodyear Tire & Rubber Company, The. Tire/wheel assembly with low molecular weight coolant-lubricant. 4,212,339, Cl. 152-158.000.
Dr. Ing. Rudolf Hell GmbH: *See*—
Muenchow, Juergen; and Sommer, Ruediger, 4,213,155, Cl. 358-262.000.
Doherty, Edward J., III, to Union Carbide Corporation. Transverse section brain imager scanning mechanism. 4,213,054, Cl. 250-505.000.
Dokus, Edwin A.; and Banks, David, to American Optical Corporation. Motor control for slow speed tape recorder. 4,213,161, Cl. 360-73.000.
Dolidovich, Elena F.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.
Dolton, Anthony D., to Vandervell Products Limited. Bearing assemblies. 4,212,505, Cl. 308-79.00A.
Domanick, Edward J.; and Haskins, Lewis B., to Johns-Manville. Universal mounting pad for electrical transformers. 4,212,446, Cl. 248-678.000.
Donald MacMillan & Son, Inc.: *See*—
MacMillan, Kenneth T., 4,212,605, Cl. 425-20.000.
Donovan Wire & Iron Company: *See*—
Rickert, William, 4,212,211, Cl. 74-538.000.
Dooley, Harry H., Jr.: *See*—
Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., 4,213,052, Cl. 250-462.000.
Dorn, Conrad P.: *See*—
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.
Dorn, Gordon L., to J. K. and Susie L. Wadley Research Institute and Blood Bank. Apparatus for detecting microbial pathogens employing a cushioning agent. 4,212,948, Cl. 435-296.000.
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Fahl, Richard L.; and Pemberton, Eugene B., 4,212,315, Cl. 137-377.000.
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Carson, Chrislyn M.; Ehr, Robert J.; and Rogers, Richard B., 4,212,869, Cl. 424-263.000.
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Dreier, Melvin E. Forage unloader door and latch assembly. 4,212,574, Cl. 414-502.000.
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Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, 4,212,737, Cl. 210-77.000.
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Bonar, Kermit M., 4,212,679, Cl. 106-57.000.
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Torev, Atanas K., 4,212,947, Cl. 435-254.000.
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Dunkley, John J., to Davy-Loewy Limited. Production of metal powder. 4,212,736, Cl. 210-73.00R.
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Fisher, Ronald; and Smith, Norman, 4,212,906, Cl. 427-237.000.
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Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,212,317, Cl. 137-565.000.
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duPont, Anthony A. Apparatus and system for producing coal gas. 4,212,652, Cl. 48-89.000.
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Boswell, George A., Jr., 4,212,815, Cl. 260-397.200.
Coates, John S., 4,213,000, Cl. 568-861.000.
Marquisee, Mark J., 4,212,918, Cl. 428-403.000.
Seagraves, Robert L., 4,212,824, Cl. 260-580.000.
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Grube, Erwin, 4,212,384, Cl. 198-684.000.
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Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, 4,212,996, Cl. 568-639.000.
Dzsida, Matthias: *See*—
Eisinger, Norbert; Wesch, Paul; and Dzsida, Matthias, 4,212,278, Cl. 123-319.000.
Eastman, George Y., to Thermacore, Inc. Unfurlable heat pipe. 4,212,347, Cl. 165-46.000.
Eastman Kodak Company: *See*—
Clark, Raymond D., 4,212,973, Cl. 546-16.000.
Drexhage, Karl H.; and Wrobel, Joseph J., 4,212,519, Cl. 350-362.000.
O'Brien, Robert J.; and Stryjewski, Walter A., 4,212,529, Cl. 355-3.00R.
Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., 4,212,673, Cl. 430-496.000.
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Douglas, Paul M.; and Kenny, Andrew A., 4,212,322, Cl. 137-625.480.
Johnson, Oliver W., 4,212,229, Cl. 91-446.000.
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,213,067, Cl. 307-252.00C.
Eaton, Jefferson O.; and Lunt, Wilbur B., to United States of America, Navy. Fuze electronic circuitry. 4,212,246, Cl. 102-270.000.
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Eckley, James N. Power saw blade change assist. 4,212,455, Cl. 269-236.000.
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Edwards, Albert L.; and Arzoumanian, Aram S., to Dataproducts Corporation. Disc printer. 4,212,549, Cl. 400-154.000.
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Haren, Doyle V.; and Edwards, William M., 4,212,327, Cl. 138-125.000.
Egawa, Muneharu: *See*—
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.
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Ehrlich, Louis. Ottoman convertible. 4,212,090, Cl. 5-14.000.
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Eickmann, Karl. Slide faces of piston shoes in radial piston machines. 4,212,230, Cl. 92-58.000.
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Eli Lilly and Company: *See*—
Chou, Ta-Sen, 4,212,977, Cl. 546-243.000.
Elinson, Dmitry S.: *See*—
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.
Eltra Corporation: *See*—
Sand, William T., 4,212,098, Cl. 29-460.000.
Emerson Electric Co.: *See*—
Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., 4,212,502, Cl. 308-3.00R.
Emhart Industries, Inc.: *See*—
Learn, Richard L.; and Sweany, Louis P., 4,213,121, Cl. 340-384.00E.
Emmerich, Werner S., to Westinghouse Electric Corp. Two-pressure type circuit interrupter. 4,213,022, Cl. 200-148.00R.
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Energy Development Corporation: *See*—
Roche, Dwain F.; and Banks, Stanley E., 4,212,598, Cl. 417-229.000.
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Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., 4,213,119, Cl. 340-151.000.
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Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, 4,212,737, Cl. 210-77.000.
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Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., 4,212,810, Cl. 260-340.50R.
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Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.
Enright, John J.; and Holzworth, William T., to B. F. Goodrich Company, The. Caliper brake rotor. 4,212,376, Cl. 188-218.0XL.
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Allen, Donald C.; and Smith, Alan T., 4,212,194, Cl. 73-73.000.
Erb, Robert A., to Franklin Institute, The. Batten for mounting a unitary solar collector panel. 4,212,291, Cl. 126-445.000.
Ericson, Kurt S. B. Waste water outlet sanitary plant comprising a siphon. 4,212,314, Cl. 137-216.200.
Ericson, William A. Safety circuit for electrical loads. 4,213,075, Cl. 315-83.000.
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Wallin, Hans-Henrik B.; and Ericsson, Eric R., 4,212,731, Cl. 209-366.500.
Ernest, Robert P., to Ford Motor Company. Low weight reciprocating engine. 4,212,281, Cl. 123-193.00H.
Esmond, William G. Method and apparatus for testing prescription glasses and other dual lenses optical devices. 4,212,538, Cl. 356-127.000.
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Essex Group, Inc.: *See*—
Brooks, Hubert C.; and Stroh, Alan E., 4,212,509, Cl. 339-95.00D.
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Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.

Ethridge, Noel H., to United States of America, Army. Differential pressure gauge. 4,212,191, Cl. 73-861.470.
Ethyl Corporation: *See—*
Shepherd, Lawrence H., Jr., 4,212,812, Cl. 260-345.100.
Ettmayer, Peter; and Kieffer, Richard, to Sandvik Aktiebolag. Cemented carbide containing molybdenum tungsten carbonitride having WC type structure. 4,212,671, Cl. 75-238.000.
Evans, James M.; and Ting, Vincent W., to SCM Corporation. Modified epoxy resins, processes for making and using same and substrates coated therewith. 4,212,781, Cl. 260-29.4UA.
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Hamner, Glen P., 4,212,771, Cl. 252-455.00Z.
Jarrett, Douglas G., 4,213,156, Cl. 358-275.000.
Koros, Robert M., 4,212,835, Cl. 261-116.000.
Fage, Etienne, to Societe ASTECH. Thrust reverser. 4,212,442, Cl. 244-110.00B.
Fahl, Richard L.; and Pemberton, Eugene B., to Dover Corporation. Shroud for pressure vacuum vent. 4,212,315, Cl. 137-377.000.
Falch, Hans. Manufacture of foil containers. 4,212,184, Cl. 72-340.000.
Falconer, David D., to Bell Telephone Laboratories, Incorporated. Feedforward nonlinear equalization of modulated data signals. 4,213,095, Cl. 375-14.000.
Falk, John C., to Borg-Warner Corporation. Graft polyblend flow improvers for PVC. 4,212,958, Cl. 525-310.000.
Falk, Richard A. Molten metal stream sampler with fill gauge. 4,212,203, Cl. 73-425.40R.
Fansteel Inc.: *See—*
Cecka, Andrew M.; and Pawling, Paul G., 4,212,461, Cl. 273-73.00F.
Pelouch, Milan S., 4,212,464, Cl. 273-416.000.
Fante, Ronald L.: *See—*
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.
Farber, Karl-Heinz, to Bosch-Siemens Hausgerate GmbH. Heat sealing roller having a temperature self-controlled PTC heating resistor for welding thermoplastic foils. 4,213,031, Cl. 219-244.000.
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Wartusch, Johann; and Fasbender, Helmut, 4,212,912, Cl. 428-209.000.
Fasching, George E., to United States of America, Energy. Signal processor for processing ultrasonic receiver signals. 4,213,184, Cl. 364-574.000.
Fay, Rudolph J. Method and apparatus for producing shaped and sized food articles. 4,212,609, Cl. 425-100.000.
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Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.
Fedortsov-Lutikov, Georgy P.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
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Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.
Feess, Erich: *See—*
Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,646, Cl. 8-532.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,648, Cl. 8-466.000.
Fenoglio, David J., to Standard Oil Company (Indiana). Fire retardants. 4,212,992, Cl. 562-492.000.
Ferrari, Franco, to Agostino Ferrari & C. S.n.C. Castor-wheel for armchairs and the like. 4,212,092, Cl. 16-35.00R.
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., to Conoco, Inc. Polymer flood filtration improvement. 4,212,748, Cl. 252-8.55D.
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., to General Electric Company. Battery holder and connector for a radio receiver or the like. 4,213,078, Cl. 320-2.000.
Ferris, Carlisle K. Camouflaged and deceptive distorted vehicle and method of assembling such vehicles. 4,212,440, Cl. 244-1.00R.
Festo-Maschinenfabrik Gottlieb Stoll: *See—*
Stoll, Kurt; and deFries, Jan R., 4,212,320, Cl. 137-625.600.
Fiat Societa per Azichi: *See—*
Urbinati, Mario, 4,212,657, Cl. 55-319.000.
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Magrini, Guido, 4,212,659, Cl. 55-385.00B.
Fields, George C., to Ty Miles, Inc. Broaching machine improvements. 4,212,573, Cl. 409-251.000.
Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, to International Business Machines Corporation. Programmed copier control. 4,213,190, Cl. 364-900.000.
Finney, Roy P., to Medical Engineering Corp. Uretheral catheter stent. 4,212,304, Cl. 128-349.00R.
Fischer, Richard V., to Polaroid Corporation. Photographic film assemblage. 4,212,527, Cl. 354-275.000.
Fisher, Eric V., to Impact Products Pty. Ltd. Sun screen blinds and the like. 4,212,341, Cl. 160-84.00R.
Fisher, Michael H.; Kulsa, Peter; and Linn, Bruce O., to Merck & Co., Inc. Symmetrically substituted pyromellitic diimides as ruminant feed additives. 4,212,880, Cl. 424-274.000.
Fisher, Ronald; and Smith, Norman, to Dunlop Limited. Method for the production of carbon/carbon composite material. 4,212,906, Cl. 427-237.000.
Fitzgerald, Kenneth D., to Denka Chemical Corporation. Polychloroprene non-phasing solvent cements. 4,212,780, Cl. 260-27.0BB.
Flatau, Abraham. Small arms ammunition. 4,212,244, Cl. 102-38.0MM.
Fleischer, Donald W.; and Asmundsson, Einar, to Veeder Industries Inc. Electrical counting mechanism. 4,213,037, Cl. 235-92.00B.
Fletcher, Vernon R.: *See—*
Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., 4,212,865, Cl. 424-250.000.
Flexible Steel Lacing Company: *See—*
Pray, Winston C., 4,212,094, Cl. 24-31.00B.
Fliege, Werner: *See—*
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.
Floyd, Paul D.: *See—*
Cline, Quentin E.; and Floyd, Paul D., 4,212,508, Cl. 339-18.00B.
Fluck, Ronald O. Boat launcher for truck bed. 4,212,580, Cl. 414-522.000.
Fluid Engineering Co.: *See—*
Heaton, Floyd L., 4,212,228, Cl. 91-170.000.
FMC Corporation: *See—*
Brubaker, Gaylen R.; and Scholer, Fred R., 4,212,757, Cl. 252-95.000.
Fong, Bosco T. W.: *See—*
Hanlon, Brenton G. A.; Chang, Jaw-Kang; and Fong, Bosco T. W., 4,212,797, Cl. 260-112.50R.
Ford, John M.: *See—*
Hendy, Brian N.; and Ford, John M., 4,212,908, Cl. 427-355.000.
Ford Motor Company: *See—*
Ernest, Robert P., 4,212,281, Cl. 123-193.00H.
Fortune, Jeffrey L. Thermosensitive safety valve. 4,212,424, Cl. 236-93.00R.
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Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.
Foster, Arthur M.: *See—*
Tang, David Y.; and Foster, Arthur M., 4,212,998, Cl. 568-807.000.
Tang, David Y.; and Foster, Arthur M., 4,212,999, Cl. 568-807.000.
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D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, 4,212,703, Cl. 162-129.000.
Fraass, Ronald G.; and Tallon, Roger W., to United States of America, Air Force. Metal nitride oxide semiconductor (MNOS) dosimeter. 4,213,045, Cl. 250-370.000.
Fradenburgh, Evan A., to United Technologies Corporation. Simplified rotor head fairing. 4,212,588, Cl. 416-141.000.
Framatome: *See—*
Gebelin, Bernard, 4,212,583, Cl. 414-728.000.
Franchi, Peter R.: *See—*
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.
Frank, Hermann: *See—*
Degenhardt, Karl-Heinz; Marx, Gerhard; and Frank, Hermann, 4,212,655, Cl. 55-181.000.
Franke, Walter; and Wolf, Ottmar, to AGFA-Gevaert, A.G. Toner fusing arrangement. 4,212,631, Cl. 432-60.000.
Franklin Institute, The: *See—*
Erb, Robert A., 4,212,291, Cl. 126-445.000.
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., to General Foods Corporation. Soft-moist pet food process. 4,212,894, Cl. 426-332.000.
Fraula, Louis F.; and Hoying, Gary V., to Hobart Corporation. Method and apparatus for removing moisture from wet pulp. 4,212,239, Cl. 100-37.000.
Freeburg, James R.: *See—*
Brohard, Ivan E.; and Freeburg, James R., 4,212,101, Cl. 29-622.000.
Freeman, William R.: *See—*
Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., 4,212,669, Cl. 75-226.000.
Freeman, Willie B., to Westinghouse Electric Corp. Pneumatic operating mechanism for a circuit-breaker. 4,213,020, Cl. 200-81.00R.
Fresow, Jurgen; and Wurst, Bert, to Robert Bosch GmbH. Ignition system for internal combustion engines. 4,212,280, Cl. 123-611.000.
Frey, LaVerne L., to Borg Instruments Inc. Solid state clock. 4,212,157, Cl. 368-87.000.
Freygang, Hanz-Joachim, to Siemens Aktiengesellschaft. Circuit arrangement for compensating transmission errors of a transformer. 4,213,083, Cl. 323-44.00R.
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Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, to Boehringer Mannheim GmbH. Pharmaceutically active derivatives of 9-[3-(4-amino-piperidino)-propyl]-adenines. 4,212,866, Cl. 424-253.000.
Friedman, Mendel, to United States of America, Agriculture. Inhibition of lanthionine formation during alkaline treatment of keratinous fibers. 4,212,800, Cl. 260-123.700.

Frielingsdorf, Hans: *See*—
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.

Fringeli, Werner, to Ciba-Geigy Corporation. Bis-triazinylaminostilbene compounds and their use as fluorescent brightening agents. 4,212,763, Cl. 252-301.230.

Fuchs, Francis J., Jr., to Western Electric Company, Inc. Apparatus for continuous extrusion. 4,212,177, Cl. 72-41.000.

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Iwasaki, Masayuki, 4,212,970, Cl. 542-455.000.
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Galer, Herbert W., to United States Steel Corporation. Gravity dump shipping crate for poultry. 4,212,410, Cl. 220-324.000.

Gali Mallofre, Salvador. Pneumatic installations. 4,212,597, Cl. 417-225.000.

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Tosswill, Christopher H.; and Beuscher, Clinton J., 4,212,707, Cl. 204-26.000.

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Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.

Gall, John C., to Sears, Roebuck & Co. Reclining chair. 4,212,495, Cl. 297-84.000.

Gammill, Paul. Frame for wall-mountable displays. 4,212,124, Cl. 40-155.000.

Gammon, Michael W.; and Harris, Colin F., to Metallurgical Development Company. Blast furnace smelting of zinc. 4,212,667, Cl. 75-86.000.

Garbett, Matthew G., to United States of America, Air Force. Electret charge technique. 4,213,168, Cl. 361-225.000.

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Russel, William J.; and Garnis, Elizabeth A., 4,212,701, Cl. 156-665.000.

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Van Meter, Arch; and Gartner, William J., 4,212,743, Cl. 210-282.000.

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Juergens, Tristan D., 4,212,179, Cl. 72-148.000.

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Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,212,897, Cl. 427-2.000.

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Borowski, Karl-Heinz; and Honke, Heinrich, 4,212,497, Cl. 299-53.000.

Gellert, Jobst U. Stack injection molding melt transfer system. 4,212,626, Cl. 425-562.000.

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Gelsdorf, Gunter; Leupold, Hermann; and Schellberg, Franz, to Didier-Werke AG. Parts subject to wear which come into contact with metal melts. 4,212,926, Cl. 428-472.000.

Gemp, Robert S., to Westinghouse Electric Corp. Variable length delay line. 4,213,191, Cl. 365-73.000.

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Adams, John N.; Kissinger, Gaylord M.; and Lee, Michael C., 4,212,997, Cl. 568-724.000.
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,212,714, Cl. 204-98.000.
Dougherty, John J.; and Rudge, George T., 4,212,287, Cl. 126-419.000.
Eichelberger, Charles W.; and Miller, Edward B., 4,213,182, Cl. 364-493.000.
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,213,078, Cl. 320-2.000.
Giles, Walter B., 4,212,653, Cl. 55-1.000.
Horner, Michael W., 4,212,587, Cl. 416-96.00R.
Mullersman, Ferdinand H., 4,213,079, Cl. 320-2.000.
Olich, Eugene E.; and Weissinger, Robert B., 4,212,592, Cl. 417-50.000.
Sheer, Russell E., Jr., 4,212,594, Cl. 417-54.000.

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Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

General Motors Corporation: *See*—
Harrington, David L., 4,212,833, Cl. 261-23.00A.
Hawk, Rufus L., 4,212,272, Cl. 123-339.000.
Rogers, Wesley A., 4,213,066, Cl. 307-252.00C.

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Bakker, Wate T., 4,212,778, Cl. 260-22.00A.

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Carroll, Michael H.; Taylor, Richard J.; and McCubbin, Peter J., 4,213,012, Cl. 179-84.00R.
McCord, Herbert W., 4,213,047, Cl. 250-381.000.
Young, John E. G., 4,212,164, Cl. 60-452.000.

Genest, Leonard J.; and Madenlian, Vache B., to Chromalloy Electronics Corporation. Combination changing system and method. 4,213,118, Cl. 340-149.00R.

Genevey, Jacques, to Alsthom-Atlantique. Flow rate limiter for a hydraulic circuit. 4,212,326, Cl. 138-40.000.

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Braunschweiler, Hans-Georg, 4,212,699, Cl. 156-558.000.

George, Albert L. Pipe handling apparatus. 4,212,576, Cl. 414-22.000.

Gerges, Andre, to Siemens Aktiengesellschaft. Circuit arrangement for the coarse synchronization of carrier signals and pulse signals with data signals in a data receiver. 4,213,006, Cl. 375-97.000.

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Hornung, Friedrich; and Gerschner, Martin, 4,213,077, Cl. 318-245.000.

Gerwitz, Paul F.: *See*—
Alman, Donald W.; Gerwitz, Paul F.; and Tygard, Charles M., 4,213,112, Cl. 338-183.000.

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Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.

Gezari, Walter A., to Hart Associates, Inc. Thermodilution injector. 4,212,298, Cl. 128-215.000.

Ghiz, George J.: *See*—
Goettl, John M.; and Ghiz, George J., 4,212,088, Cl. 4-490.000.

Giampieri, Claudio, to Minnesota Mining and Manufacturing Company. Color contrast radiographic film. 4,212,936, Cl. 430-503.000.

Gibbs, Charles G., to Gulf Oil Corporation. 1-(2,6-Dichlorobenzoyl)-3-(5-chloro-2-pyridinyl-N-oxide)urea and use as insecticide. 4,212,870, Cl. 424-263.000.

Giles, Walter B., to General Electric Company. Process and apparatus for separating particulate matter from gaseous media. 4,212,653, Cl. 55-1.000.

Gipson, Robert M.: *See*—
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Cuvelier, Jean-Philippe; and Gistau, Henri, 4,212,429, Cl. 241-26.000.

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Letner, Eugene; and Gobin, Donald L., 4,212,363, Cl. 180-19.00H.

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Goetz, Norbert; Himmele, Walter; and Hupfer, Leopold, to BASF Aktiengesellschaft. Preparation of cis-2,6-dimethylmorpholine. 4,212,972, Cl. 544-106.000.

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Buran, Ulrich; and Beyer, Horst, 4,212,602, Cl. 418-178.000.

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Bemis, John D.; and Goff, Willie, Jr., 4,212,552, Cl. 400-249.000.

Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., to News Log International, Incorporated. Digital microfiche and apparatus for accurately positioning the microfiche. 4,213,040, Cl. 235-476.000.

Goldacker, Hubert: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.

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Lewanoni, Dov, 4,212,132, Cl. 46-118.000.

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Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., to United States of America, Energy. System for testing optical fibers. 4,212,537, Cl. 356-73.100.

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Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.

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Dobson, Robert L., 4,212,339, Cl. 152-158.000.

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Gorman, Jeremy W., to Lubrication Technology, Inc. Metal working lubricant. 4,212,750, Cl. 252-32.500.

Gorrell, Bruce L. Utility meter reader alert device. 4,212,262, Cl. 116-307.000.

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Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Goss, David C.; and Hageman, Richard A., to Thermon Manufacturing Company. Conduction heating assembly. 4,213,034, Cl. 219-535.000.

Gossmann, Hans: *See*—
Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, 4,212,746, Cl. 210-495.000.

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Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-111.000.

Goto, Yuzuru; Daigo, Yukitaka; and Hitotsuyanagi, Mikio, to Somar Manufacturing Co., Ltd. Oil-water separation filters. 4,212,733, Cl. 210-36.000.

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Patsch, Manfred; Schneider, Dieter; Gotsmann, Guenther; and Hettche, Albert, 4,212,709, Cl. 204-49.000.

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Gracia, Bert E.: *See*—
Weidler, Jay B.; Gracia, Bert E.; and Hull, Tommy L., 4,212,563, Cl. 405-195.000.

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Durand, Harry W.; and Bunker, Richard D., 4,212,704, Cl. 162-175.000.

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Blanpain, Guy; and Grandfils, Pierre, 4,212,362, Cl. 180-6.480.

Granin, Evgeny F.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

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Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.

Grant, Rodger B., to Deere & Company. Gate attachment for manure spreader. 4,212,427, Cl. 239-676.000.

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Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,212,766, Cl. 252-432.000.

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LaDelfa, Christopher J.; and Greene, Marvin, 4,212,112, Cl. 34-9.000.

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Hart, James D.; and Lightner, Joseph C., 4,212,252, Cl. 105-406.00R.

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Ruff, David L.; and Nath, N. Gokul, 4,212,755, Cl. 252-62.000.

Gretag Aktiengesellschaft: *See*—
Huber, Ernst, 4,212,419, Cl. 226-23.000.

Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., to United States of America, Energy. Fuel cell manifold sealing system. 4,212,929, Cl. 429-37.000.

Griffin, Joseph J.: *See*—
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

Grodde, Karl-Heinz; and Schulz, Alfred, to Deutsche Texaco Aktiengesellschaft. Aqueous drilling fluid. 4,212,794, Cl. 260-97.600.

Groff, William R.: *See*—
Carp, Ralph W.; Weber, Robert E.; and Groff, William R., 4,213,181, Cl. 364-431.000.

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Nuzzolo, Carlo; Vignola, Rodolfo; and Groggia, Antonio, 4,212,799, Cl. 260-123.500.

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Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,646, Cl. 8-532.000.
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van der Burg, Sjirk; Grosch, Karl A.; and Bertrand, Marcel J., 4,212,340, Cl. 152-355.000.

Gross, Harry R. Switch structure having parts embedded in plastic. 4,213,108, Cl. 335-131.000.

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Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., 4,212,310, Cl. 131-17.00R.

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Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, to Boehringer Mannheim GmbH. Reagent and method for the determination of cholesterol. 4,212,938, Cl. 435-11.000.

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Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

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Cricchio, Renato; and Berti, Marisa, 4,212,873, Cl. 424-270.000.
Tarzia, Giorgio; and Panzone, Gianbattista, 4,212,806, Cl. 260-326.200.

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Degen, Hans-Juergen; and Grychtol, Klaus, 4,212,644, Cl. 8-506.000.

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Kimball, Stephen F.; and Martin, Roy C., 4,213,170, Cl. 362-267.000.

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Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, 4,212,967, Cl. 528-500.000.

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Guillen, D. Fernando M., to Industrias Rumbo, S.A. Dual position yogurt making device. 4,212,236, Cl. 99-467.000.

Guinn, Jerry H., to Service Fracturing Company and Airry, Inc. Method for injecting carbon dioxide into a well. 4,212,354, Cl. 166-303.000.

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Boehme, Robert E.; and Murphy, Clarence R., 4,212,848, Cl. 422-267.000.
Gibbs, Charles G., 4,212,870, Cl. 424-263.000.

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Madgavkar, Ajay M.; Swift, Harold E.; and Cupples, Barrett L., 4,213,001, Cl. 585-510.000.

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Lantermann, Heinz, 4,212,599, Cl. 417-295.000.

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Haarsma, John C.: *See*—
Lusk, George E.; Mak, Sioe T.; and Haarsma, John C., 4,212,696, Cl. 156-294.000.

Haas, Yehuda: *See*—
Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., 4,212,717, Cl. 204-158.00R.

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Haegermann, Helmut. Installation for the stamping of advancing rolling stock in rolling mills and continuous casting plants. 4,212,243, Cl. 101-4.000.

Hageman, Richard A.: *See*—
Goss, David C.; and Hageman, Richard A., 4,213,034, Cl. 219-535.000.

Hagen, Alexander: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.

Hagen, Magnus F. Adjustable mounting, and securing and fastening assembly with channel bar. 4,212,445, Cl. 248-245.000.

Hajduch, James D. Training apparatus for visually impaired person. 4,212,116, Cl. 35-29.00R.

Hall, Leo M.: *See*—
Myrick, James E.; and Hall, Leo M., 4,212,939, Cl. 435-19.000.

Hall, Wilbur L., to Texaco Inc. Hydraulic mining technique for recovering bitumen from tar sand deposit. 4,212,353, Cl. 166-303.000.

Halperin, Herbert H.: *See*—
Holtzman, Norman; Hromadka, Robert J.; and Halperin, Herbert H., 4,213,116, Cl. 340-73.000.

Halter, Mark A.; and Malloy, Thomas P., to UOP Inc. Electrochemical oxidation of alkyl aromatic compounds. 4,212,710, Cl. 204-78.000.

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Ohtuka, Tadao; Ohe, Takeshi; and Hamano, Kunihiro, 4,212,366, Cl. 180-141.000.

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Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.

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Schnell, Georg; Hammon, Fritz; and Ohlinger, Manfred, 4,212,903, Cl. 427-127.000.

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Bencze, Gyorgy; and Hamori, Andras, 4,212,536, Cl. 356-71.000.

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Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.

Hara, Kaoru: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

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Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, 4,212,951, Cl. 528-495.000.

Hardt, Peter, to Lonza Ltd. Process for the catalytic production of 2-substituted pyridines. 4,212,978, Cl. 546-253.000.

Hardy, Terence: *See*—
Litchfield, Leon G.; and Hardy, Terence, 4,212,503, Cl. 308-3.600.

Haren, Doyle V.; and Edwards, William M., to Dayco Corporation. Polymeric hose. 4,212,327, Cl. 138-125.000.

Harford, Jack R., to RCA Corporation. AGC keying signal circuit. 4,213,151, Cl. 358-178.000.

Harrington, David L., to General Motors Corporation. Carburetor. 4,212,833, Cl. 261-23.00A.

Harrington Manufacturing Company: *See*—
Mitchell, John D.; and Sessoms, J. C., Jr., 4,212,634, Cl. 432-186.000.

Harris, Colin F.: *See*—
Gammon, Michael W.; and Harris, Colin F., 4,212,667, Cl. 75-86.000.

Hart Associates, Inc.: *See*—
Gezari, Walter A., 4,212,298, Cl. 128-215.000.

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Haskins, Lewis B.: *See*—
Domanick, Edward J.; and Haskins, Lewis B., 4,212,446, Cl. 248-678.000.

Hatzakis, Michael: *See*—
Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., 4,212,935, Cl. 430-326.000.

Hawk, Rufus L., to General Motors Corporation. Idle speed control device for internal combustion engine. 4,212,272, Cl. 123-339.000.

Hawley, John T.: *See*—
Bragg, Robert C., Jr.; and Hawley, John T., 4,212,224, Cl. 85-1.00K.

Hayashi, Hideo: *See*—
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, 4,212,783, Cl. 260-29.60H.

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Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.

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Haynie, Cyrus C.: *See*—
United States of America, National Aeronautics and Space Administration; Beuyukian, Charles S.; Heisman, Robert M.; Haynie, Cyrus C.; and Ruppe, Emil P., 4,212,690, Cl. 148-131.000.

Head, Leon E.: *See*—
Shum, Edward K.; Martija, Henry M.; and Head, Leon E., 4,213,160, Cl. 360-73.000.

Heaton, Floyd L., to Fluid Engineering Co. Power plant. 4,212,228, Cl. 91-170.000.

Hebert, Raymond T. Solar shutter or blind system for windows. 4,212,289, Cl. 126-428.000.

Hegedus, Charles C. Automobile trunk lock security device. 4,212,176, Cl. 70-417.000.

Hegler, Ralph-Peter: *See*—
Hegler, Wilhelm; and Hegler, Ralph-Peter, 4,212,618, Cl. 425-326.100.

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Jones, Sidney C.; Lindsay, Henry R.; and Heightman, Denis W., 4,213,143, Cl. 358-4.000.

Heilen, Gerd: *See*—
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.

Heisman, Robert M.: *See*—
United States of America, National Aeronautics and Space Administration; Beuyukian, Charles S.; Heisman, Robert M.; Haynie, Cyrus C.; and Ruppe, Emil P., 4,212,690, Cl. 148-131.000.

Helfenbein, Manfred: *See*—
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.

Helffrich, Edmund R. Loudspeaker enclosure for mid-wall location. 4,213,008, Cl. 179-1.00E.

Helfrich, Ernest R.: *See*—
Paivinen, John; Eisenhower, Walter D., Jr.; and Helfrich, Ernest R., 4,212,100, Cl. 29-571.000.

Helinski, Edward F., to International Business Machines Corporation. Ribbon storage device. 4,212,420, Cl. 226-118.000.

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Helpinstill, Charles T., II. Magnetic sensor for a musical instrument and method of constructing same. 4,212,220, Cl. 84-1.140.

Hendy, Brian N.; and Ford, John M., to Imperical Chemical Industries Limited. Apparatus and method for producing coated film. 4,212,908, Cl. 427-355.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Schaper, Ulf-Armin; and Bruns, Klaus, 4,212,773, Cl. 252-522.00R.
Henkle, Ted. Violin shoulder rest. 4,212,222, Cl. 84-278.000.
Henne, Werner, to Akzo N.V. Artificial kidney. 4,212,738, Cl. 210-94.000.
Henning, Bodo: *See*—
Otto, Heinz; Hoppmann, Helmut; and Henning, Bodo, 4,212,600, Cl. 417-360.000.
Hensley, Albert L., Jr.; and Quick, Leonard M., to Standard Oil Company (Indiana). Process for demetallation and desulfurization of heavy hydrocarbons. 4,212,729, Cl. 208-210.000.
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, to Bayer Aktiengesellschaft. Carboxylic acid esters of pentaerythritol. 4,212,816, Cl. 260-410.600.
Heppner, John B., to C. A. Pemberton & Co. Web dispenser. 4,212,217, Cl. 83-277.000.
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Holzinger, Karl, 4,212,614, Cl. 425-214.000.
Herbst, Richard L.: *See*—
Byer, Robert L.; and Herbst, Richard L., 4,213,060, Cl. 307-426.000.
Herculite Protective Fabrics Corporation: *See*—
Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., 4,212,153, Cl. 368-62.000.
Herman, Ralph: *See*—
Rauchfuss, Charles G., Jr.; Herman, Ralph; and Barton, Harvey R., Jr., 4,212,422, Cl. 226-196.000.
Hermann Waldner KG: *See*—
Wulf, Gunther, 4,212,448, Cl. 251-184.000.
Herrmann, Herbert: *See*—
Laimer, Friedrich; and Herrmann, Herbert, 4,212,453, Cl. 266-158.000.
Herron, William L.; and Rummel, Edward W., to Singer Company, The. Sewing machine full and low bobbin indicator. 4,212,257, Cl. 112-278.000.
Hess, Klaus: *See*—
Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, 4,212,737, Cl. 210-77.000.
Hettche, Albert: *See*—
Patsch, Manfred; Schneider, Dieter; Gotsmann, Guenther; and Hettche, Albert, 4,212,709, Cl. 204-49.000.
Heubach, Erhard: *See*—
Bergner, Dieter; Heubach, Erhard; Hofmann, Wiafried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.
Hickman, Alan J.: *See*—
Peterson, Laurel L.; and Hickman, Alan J., 4,212,375, Cl. 187-9.00R.
Hidaka, Kazutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Linear antenna arrays. 4,213,133, Cl. 343-854.000.
Higashida, Susumu: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Hilge, Bernhard: *See*—
Klotzbucher, Hansjong; Kolb, Erwin; and Hilge, Bernhard, 4,212,451, Cl. 266-50.000.
Hill, Duncan E., Jr., to Design Maintenance Corporation. Apparatus for marking building panels. 4,212,110, Cl. 33-174.00G.
Hill, Robert S.: *See*—
Williams, Ronald S.; and Hill, Robert S., 4,212,099, Cl. 29-507.000.
Hillhouse, Charles R., to Tasope' Limited. Printing plate processing machine. 4,212,263, Cl. 118-37.000.
Hilton, Brian T.; and Staff, Paul, to UCC International Limited. Disposable filter canister and housing. 4,212,739, Cl. 210-130.000.
Himmele, Walter: *See*—
Goetz, Norbert; Himmele, Walter; and Hupfer, Leopold, 4,212,972, Cl. 544-106.000.
Hines, Charles E.: *See*—
Clements, Boyd D.; Hines, Charles E.; and Kubat, James J., 4,212,357, Cl. 172-22.000.
Hirano, Masachika: *See*—
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, 4,212,879, Cl. 424-274.000.
Hirao, Kazushige: *See*—
Nakayama, Yoshiki; Hirao, Kazushige; and Yazawa, Chihiro, 4,212,831, Cl. 568-17.000.
Hiromitsu, Hirayama, to TDK Electronics Company Limited. Variable leakage transformer. 4,213,084, Cl. 323-56.000.
Hirsch, John M.; and Stapleton, Robert G., to Shell Oil Company. Ultrasonic sensor. 4,212,201, Cl. 73-290.00V.
Hirzy, John W., to Monsanto Company. Plastifiers, method of preparation and PVC compositions containing same. 4,212,957, Cl. 525-131.000.
Hitachi Heating Appliances Co., Ltd.: *See*—
Satoh, Kenji; Tachikawa, Hajime; and Watanabe, Mitsuru, 4,213,023, Cl. 219-10.55B.
Hitachi, Ltd.: *See*—
Kakinuma, Kazuaki, 4,213,152, Cl. 358-186.000.
Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, 4,213,117, Cl. 340-146.30H.
Kurihara, Nobuo, 4,213,175, Cl. 364-119.000.
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.
Watanabe, Masanobu, 4,213,166, Cl. 361-86.000.
Watanabe, Shizuhisa, 4,213,125, Cl. 340-753.000.
Hitotsuyanagi, Mikio: *See*—
Goto, Yuzuru; Daigo, Yukitaka; and Hitotsuyanagi, Mikio, 4,212,733, Cl. 210-36.000.
Hobart Corporation: *See*—
Fraula, Louis F.; and Hoying, Gary V., 4,212,239, Cl. 100-37.000.
HOBEG Hochtemperaturreaktor-Brennelement GmbH: *See*—
Hrovat, Milan; Huschka, Hans; and Spener, Gerhard, 4,212,898, Cl. 427-6.000.
Hoda, Syed N., to Corning Glass Works. Strengthened polychromatic glasses. 4,212,919, Cl. 428-410.000.
Hodakowski, Leonard E.; and Jenkinson, Richard D., to Union Carbide Corporation. Process for producing a colorant containing highlighted coated substrate. 4,212,899, Cl. 427-44.000.
Hodge, Malcolm H., to TRW Inc. Fiber optic coupler for tapping into fiber optic line. 4,212,512, Cl. 350-96.150.
Hoechst Aktiengesellschaft: *See*—
Benninger, Siegfried; and Schmidt, Adolf, 4,212,715, Cl. 204-99.000.
Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,646, Cl. 8-532.000.
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Degenhardt, Karl-Heinz; Marx, Gerhard; and Frank, Hermann, 4,212,655, Cl. 55-181.000.
Gutweiler, Klemens, 4,212,765, Cl. 252-430.000.
Konig, Wolfgang, 4,212,796, Cl. 260-112.50R.
Kroh, Adolf; Fuchs, Otto; and Spietschka, Ernst, 4,212,975, Cl. 546-49.000.
Muller, Werner H., 4,212,823, Cl. 260-571.000.
Hoefke, Wolfgang: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.
Hoelzl, Ludwig; and Reisinger, Konrad, to Siemens Aktiengesellschaft. Process for T.D.M. frame synchronization employing variable synchronizing words. 4,213,011, Cl. 370-100.000.
Hoen, Cuyler: *See*—
Pufpaff, Frederick J.; and Hoen, Cuyler, 4,212,560, Cl. 403-353.000.
Hoffmann-La Roche Inc.: *See*—
Holland, George W.; and Rosen, Perry, 4,212,993, Cl. 562-503.000.
Hoffmann, Werner: *See*—
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, 4,212,436, Cl. 242-192.000.
Hofmann, Winfried: *See*—
Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.
Holbert, Marvin L., Jr.: *See*—
Stone, William B.; and Holbert, Marvin L., Jr., 4,212,562, Cl. 405-195.000.
Holce, Thomas J. Proximity switch having adjustable sensitivity. 4,213,110, Cl. 335-207.000.
Holko, Anthony P.: *See*—
Avedesian, Michael M.; and Holko, Anthony P., 4,212,722, Cl. 204-222.000.
Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. 16-Substituted prostaglandins. 4,212,993, Cl. 562-503.000.
Hollandse Signaalapparaten B.V.: *See*—
Mulder, Willem; Vaessen, Dorotheus C. L.; and De Lange, Nicolaas H., 4,213,126, Cl. 343-5.0SM.
Vaessen, Dorotheus C. L., 4,213,130, Cl. 343-16.00M.
Hollister, Geoffrey L.: *See*—
Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., 4,212,120, Cl. 36-129.000.
Hollister Incorporated: *See*—
Nolan, John L., 4,212,303, Cl. 128-346.000.
Holtzman, Norman; Hromadka, Robert J.; and Halperin, Herbert H. Vehicle turn detection apparatus. 4,213,116, Cl. 340-73.000.
Holzbaur, Siegfried, to Robert Bosch GmbH. Fuel supply system. 4,212,834, Cl. 261-44.00A.
Holzinger, Karl, to Herbert Kanngiesser GmbH & Co. Disc brake holding device for pivotal elements of expandable plastics molds. 4,212,614, Cl. 425-214.000.
Holzworth, William T.: *See*—
Enright, John J.; and Holzworth, William T., 4,212,376, Cl. 188-218.0XL.
Homan, Gerlof, to Survival Technology, Inc. Stabilized benactyzine hydrochloride. 4,212,886, Cl. 424-308.000.
Homeyer, Bernhard: *See*—
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, 4,212,501, Cl. 303-116.000.
Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, 4,212,141, Cl. 56-11.800.

Honey Bee Corporation: *See*—
Takahata, Jungo, 4,212,893, Cl. 426-330.200.
Honeywell Inc.: *See*—
Jenkins, Leonard E., Jr.; and Lowe, Peter R., 4,213,136, Cl. 346-139.00C.
Newbold, William F.; and Singh, Gurnam, 4,212,209, Cl. 73-721.000.
Honke, Heinrich: *See*—
Borowski, Karl-Heinz; and Honke, Heinrich, 4,212,497, Cl. 299-53.000.
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, to Taiho Pharmaceutical Company, Limited. Glyoxal-2-oxim derivatives and a process for relieving pain/or inflammation therewith. 4,212,874, Cl. 424-272.000.
Hoo, Ong S. Rotary engine. 4,212,283, Cl. 123-210.000.
Hooker Chemicals & Plastics Corp.: *See*—
Day, F. Howard, 4,212,819, Cl. 260-543.00R.
Tang, David Y.; and Foster, Arthur M., 4,212,998, Cl. 568-807.000.
Tang, David Y.; and Foster, Arthur M., 4,212,999, Cl. 568-807.000.
Hoppmann, Helmut: *See*—
Otto, Heinz; Hoppmann, Helmut; and Henning, Bodo, 4,212,600, Cl. 417-360.000.
Horiuchi, Hideo: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Horner, Michael W., to General Electric Company. Cooling system for a gas turbine using V-shaped notch weirs. 4,212,587, Cl. 416-96.00R.
Hornung, Friedrich; and Gerschner, Martin, to Robert Bosch GmbH. Speed control circuit for a universal electric motor. 4,213,077, Cl. 318-245.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Reaction products of sulfurized olefin adducts of phosphorodithioic acids and organic compositions containing same. 4,212,753, Cl. 252-46.600.
Horton, Edward E., to Deep Oil Technology, Inc. Pipe construction and method of making same. 4,212,329, Cl. 138-155.000.
Hoshino, Kazuhisa: *See*—
Yokokoji, Shyoji; and Hoshino, Kazuhisa, 4,212,299, Cl. 128-272.000.
Hosokawa, Minoru: *See*—
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.
Hotchkiss, Philip; Gipson, Robert M.; and Nieh, Edward C. Y., to Texaco Development Corporation. Acrylamide or methacrylamide alkoxypropyl quaternary compounds. 4,212,820, Cl. 260-561.00N.
Houlihan, William J., to Sandoz, Inc. Substituted or unsubstituted 2-phenylbenzimidazoles as anti-obesity agents. 4,212,876, Cl. 424-273.00B.
Houp, Robert L., to J. R. Weaver, Inc. Overhead door cable safety device. 4,213,019, Cl. 200-61.130.
Houston, Paul L.: *See*—
Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., 4,212,717, Cl. 204-158.00R.
Howard, Durrell U. Steering assembly for towed vehicles. 4,212,483, Cl. 280-444.000.
Howell, John L.: *See*—
Nemeth, Edward J.; McGreal, Joseph E.; and Howell, John L., 4,212,851, Cl. 423-230.000.
Howmet Turbine Components Corporation: *See*—
Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., 4,212,669, Cl. 75-226.000.
Hoying, Gary V.: *See*—
Fraula, Louis F.; and Hoying, Gary V., 4,212,239, Cl. 100-37.000.
Hoyles, Ronald, to Lever Brothers Company. Toothpaste. 4,212,856, Cl. 424-52.000.
Hromadka, Robert J.: *See*—
Holtzman, Norman; Hromadka, Robert J.; and Halperin, Herbert H., 4,213,116, Cl. 340-73.000.
Hrovat, Henry J. Device for de-icing power cables. 4,212,378, Cl. 191-62.000.
Hrovat, Milan; Huschka, Hans; and Spener, Gerhard, to HOBEG Hochtemperaturreaktor-Brennelement GmbH. Process for the production of coated fuel particles for high temperature reactors. 4,212,898, Cl. 427-6.000.
Hsieh, Jack. Apparatus for the direct reduction of iron ore. 4,212,452, Cl. 266-156.000.
Hsu, Tauan-Yuan. Automatic asparagus peeling machine. 4,212,237, Cl. 99-589.000.
Huang, Liang H.: *See*—
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Hubbard, Dana L. Harmonica stand. 4,212,219, Cl. 84-1.060.
Huber, Ernst, to Gretag Aktiengesellschaft. Strip guiding device. 4,212,419, Cl. 226-23.000.
Huebner, Charles F.: *See*—
Gschwend, Heinz W.; and Huebner, Charles F., 4,212,808, Cl. 260-340.300.
Hughes Aircraft Company: *See*—
Pines, Michael Y., 4,213,137, Cl. 357-30.000.
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., to Armour Pharmaceutical Company. Cyclization of peptides. 4,212,795, Cl. 260-112.50T.
Hughes, Max B. Apparatus for forming individual serving portions of a frozen dairy confection. 4,212,611, Cl. 425-114.000.
Hughes Microelectronics Limited: *See*—
Morcom, Richard, 4,213,065, Cl. 307-251.000.
Hukuba, Hiroshi. Inspection device for cavities. 4,212,105, Cl. 433-30.000.
Hull, Tommy L.: *See*—
Weidler, Jay B.; Gracia, Bert E.; and Hull, Tommy L., 4,212,563, Cl. 405-195.000.
Hulsey, Eldon E., to Butler, J. R.; Hulsey, Eldon S.; Hulsey, Joe; and Pipe Line Tech., Inc. Low noise rotary control valve. 4,212,321, Cl. 137-625.320.
Hulsey, Eldon S.: *See*—
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.
Hulsey, Joe: *See*—
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.
Humphrey, Marshall F.: *See*—
United States of America, National Aeronautics and Space Administration; and Humphrey, Marshall F., 4,212,732, Cl. 210-32.000.
Hupfer, Leopold: *See*—
Goetz, Norbert; Himmele, Walter; and Hupfer, Leopold, 4,212,972, Cl. 544-106.000.
Hurlbut, Donovan W.: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., 4,213,040, Cl. 235-476.000.
Huschka, Hans: *See*—
Hrovat, Milan; Huschka, Hans; and Spener, Gerhard, 4,212,898, Cl. 427-6.000.
Hutchison, Gary. Portable confined surface sand blast apparatus. 4,212,138, Cl. 51-427.000.
Hydrasearch Co. Inc.: *See*—
Jones, Walter L.; and Triest, Willard G., 4,212,487, Cl. 285-95.000.
Hydroscience, Inc.: *See*—
Miller, Richard A., 4,212,735, Cl. 210-63.00R.
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Idel, Karsten. Recovery of high-quality polycarbonate from polycarbonate scrap. 4,212,774, Cl. 260-2.300.
Ihara Chemical Industry Company, Limited: *See*—
Nakayama, Yoshiki; Hirao, Kazushige; and Yazawa, Chihiro, 4,212,831, Cl. 568-17.000.
Iida, Yoshiaki: *See*—
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-111.000.
Iida, Yoshiya; and Ohga, Shoichiro, to Shin-Etsu Handotal Co., Ltd. Selector device for the determination of the type of electroconductivity in semiconductor wafers. 4,213,086, Cl. 324-62.000.
Ikeda, Masaki, to Tomy Kogyo Co., Inc. Turntable article holder with ejector. 4,212,412, Cl. 221-81.000.
Imataki, Hiroyuki; Kobayashi, Masatsune; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Image display device. 4,212,518, Cl. 350-357.000.
Impact Products Pty. Ltd.: *See*—
Fisher, Eric V., 4,212,341, Cl. 160-84.00R.
Imperical Chemical Industries Limited: *See*—
Cliff, George S.; and Willocks, Jack, 4,212,840, Cl. 264-338.000.
Hendy, Brian N.; and Ford, John M., 4,212,908, Cl. 427-355.000.
Imura, Toshinori: *See*—
Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, 4,212,523, Cl. 354-25.000.
IMW Industries, Inc.: *See*—
Minicozzi, Al, 4,212,568, Cl. 407-53.000.
Ina, Yoshifumi, to Nippondenso Co., Ltd. Motor pump. 4,212,601, Cl. 417-365.000.
Industrias Rumbo, S.A.: *See*—
Guillen, D. Fernando M., 4,212,236, Cl. 99-467.000.
Industrie Pirelli, S.p.A.: *See*—
Ballocci, Giovanni, 4,212,619, Cl. 425-373.000.
Portinari, Antonio; and Longoni, Sergio, 4,212,097, Cl. 29-450.000.
Inertia Switch Limited: *See*—
Weale, John L.; and Wiles, Stephen P., 4,212,208, Cl. 73-652.000.
Ingenieursbureau Marcon (Marine Consultants) B.V.: *See*—
Wipkink, Johannes, 4,212,561, Cl. 405-195.000.
Innocenti Santeustacchio S.p.A.: *See*—
Cattaneo, Filippo; and Corolla, Rosolino, 4,212,180, Cl. 72-249.000.
Innova, Inc.: *See*—
Moeglich, Karl, 4,212,724, Cl. 204-273.000.
Inoue, Kozo: *See*—
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Inoue, Mitsumasa, to Nissan Motor Company, Limited. Carburetor. 4,212,275, Cl. 123-549.000.
Inoue, Noriyuki: *See*—
Mihara, Yuji; Takei, Haruo; and Inoue, Noriyuki, 4,212,672, Cl. 430-494.000.
Institutt for Atomenergi: *See*—
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.
INTERATOM Internationale Atomreaktorbau GmbH: *See*—
Podgorski, Jan, 4,213,071, Cl. 310-344.000.
Intercane Systems, Inc.: *See*—
Tilby, Sydney E., 4,212,616, Cl. 425-256.000.
Interlake, Inc.: *See*—
Simmons, James R.; and Weller, Frank C., 4,212,238, Cl. 100-32.000.

International Business Machines Corporation: *See—*
Acosta, Robert G.; McBride, Michael E.; and Pascoe, Robert A., 4,212,553, Cl. 400-279.000.
Andros, Frank E.; and Shay, Robert J. E., 4,212,349, Cl. 165-105.000.
Bemis, John D.; and Goff, Willie, Jr., 4,212,552, Cl. 400-249.000.
Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., 4,212,935, Cl. 430-326.000.
Diez, Mark F.; Lewis, David O.; and Robinson, Thomas S., 4,213,178, Cl. 364-200.000.
Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, 4,213,190, Cl. 364-900.000.
Helinski, Edward F., 4,212,420, Cl. 226-118.000.
Helinski, Edward F., 4,212,550, Cl. 400-196.100.
Pfeiffer, Hans C., 4,213,053, Cl. 250-492.00A.
International Flavors & Fragrances Inc.: *See—*
Lindauer, Jerome, 4,212,089, Cl. 4-228.000.
International Harvester Company: *See—*
Miner, Robert C., 4,212,142, Cl. 56-14.400.
International Submarine Services, S.A.: *See—*
Collins, H. Dale, 4,212,258, Cl. 114-312.000.
International Tool & Supply Company, Inc.: *See—*
Lee, Harlan E.; and Toelke, Lester W., 4,212,240, Cl. 100-53.000.
Ishibitsu, Kokichi: *See—*
Kawamura, Takao; and Ishibitsu, Kokichi, 4,213,030, Cl. 219-216.000.
Ishii, Hiroshi: *See—*
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.
Ishikawa, Katsumi: *See—*
Kawai, Masayasu; and Ishikawa, Katsumi, 4,212,197, Cl. 73-141.00A.
Ishizuka, Ichiro: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, to Mitsubishi Gas Chemical Company, Inc. Process for producing carboxylic acids or esters thereof. 4,212,989, Cl. 560-232.000.
Itaya, Hideo, to Olympus Optical Co., Ltd. Wide-visual-field microscope objective lens system. 4,212,515, Cl. 350-175.0ML.
Itaya, Nobushige: *See—*
Ohsumi, Tadashi; and Itaya, Nobushige, 4,212,829, Cl. 568-433.000.
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, 4,212,879, Cl. 424-274.000.
Itek Corporation: *See—*
Robbins, Daniel H., 4,212,389, Cl. 206-316.000.
Ito, Hidefumi: *See—*
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.
Ito, Shigeyasu: *See—*
Uedaira, Satoru; and Ito, Shigeyasu, 4,212,344, Cl. 164-87.000.
Itoga, Kiyoshi: *See—*
Aibe, Toshio; and Itoga, Kiyoshi, 4,212,852, Cl. 423-230.000.
Ivanchenko, Julia N.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Ivanov, Leonid F.: *See—*
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.
Ivanova, Ielena A.: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.
Iversen, Poul C. C.: *See—*
Olsen, Gunnar E. R.; and Iversen, Poul C. C., 4,213,032, Cl. 219-364.000.
Iverson, Myren L.: *See—*
Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., 4,213,199, Cl. 367-117.000.
Ives, Frank E. Deflector for attachment to fiber chopper nozzle. 4,212,216, Cl. 83-165.000.
Iwasaki, Masayuki, to Fuji Photo Film Co., Ltd. 2-Halomethyl-5-vinyl-1,3,4-oxadiazole compounds. 4,212,970, Cl. 542-455.000.
Iwata, Syuzi: *See—*
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.
Izumi, Tetsuro: *See—*
Nishiwaki, Yoshiro; and Izumi, Tetsuro, 4,212,471, Cl. 274-38.000.
J. K. and Susie L. Wadley Research Institute and Blood Bank: *See—*
Dorn, Gordon L., 4,212,948, Cl. 435-296.000.
J. R. Weaver, Inc.: *See—*
Houp, Robert L., 4,213,019, Cl. 200-61.130.
Jablonski, Karl-Heinz: *See—*
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.
Jackson, Hubert H. Layout tool for framing studs. 4,212,108, Cl. 33-174.00G.
Jacobson, Sava. Fail-safe mechanisms for a telephone answering device. 4,213,010, Cl. 179-6.00E.
Jaedicke, Hagen: *See—*
Paust, Joachim; Schneider, Joachim; and Jaedicke, Hagen, 4,212,827, Cl. 568-347.000.
Jagenberg Werke AG: *See—*
Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, 4,212,700, Cl. 156-568.000.
James River Hydrate & Supply Co., Inc.: *See—*
Burkett, William E., 4,212,682, Cl. 106-288.00B.
James, Stanley L.: *See—*
Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., 4,212,120, Cl. 36-129.000.
Jameson, Melvin N.; and Krulik, Gerald A. Electroless plating of nonconductive substrates. 4,212,768, Cl. 252-441.000.
Janko, Mike A. Apparatus for preventing video tape duplication. 4,213,149, Cl. 358-153.000.
Jansen, Harley W.: *See—*
Zylstra, Henry J.; and Jansen, Harley W., 4,213,165, Cl. 361-94.000.
Jansen, Willem: *See—*
Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.
Japan Atomic Energy Research Institute: *See—*
Sakurada, Ichiro; Okada, Toshio; and Kaji, Kanako, 4,212,649, Cl. 8-115.500.
Japan Storage Battery Company Limited: *See—*
Fujita, Yuko; and Kudo, Hisashi, 4,212,891, Cl. 426-231.000.
Jarrett, Douglas G., to Exxon Research & Engineering Co. System for the phase locking synthesized high frequency pulses to a low frequency signal. 4,213,156, Cl. 358-275.000.
Jaskolski, Stanley V.: *See—*
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,213,067, Cl. 307-252.00C.
JDC Welding and Research, Inc.: *See—*
Costley, Eugene J., 4,213,024, Cl. 219-61.000.
Jefferson, Mark T.: *See—*
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Jellesma, Anne, to Machinefabriek W. Hubert & Co. B.V. Belt filter. 4,212,745, Cl. 210-401.000.
Jenkins, Leonard E., Jr.; and Lowe, Peter R., to Honeywell Inc. Electrical contact for conductive-backed paper. 4,213,136, Cl. 346-139.00C.
Jenkinson, Richard D.: *See—*
Hodakowski, Leonard E.; and Jenkinson, Richard D., 4,212,899, Cl. 427-44.000.
Jeppsson, Jan-Bertil, to AB Akerlund & Rausing. Container closure members. 4,212,409, Cl. 220-276.000.
Jespersen, Aksel, to Danfoss A/S. Method and apparatus for prescribing a time of day. 4,213,062, Cl. 307-117.000.
Jidosha Kiki Co., Ltd.: *See—*
Ohtuka, Tadao; Ohe, Takeshi; and Hamano, Kunihiro, 4,212,366, Cl. 180-141.000.
Jim Dandy Company, The: *See—*
Brown, Arthur V., Jr.; and Karrasch, Richard J., 4,212,896, Cl. 426-623.000.
Jimenez, Antonio, to Mefina S.A. Detachable sole plate. 4,212,256, Cl. 112-240.000.
Johannes Buchsteiner GmbH & Co KG: *See—*
Buchsteiner, Renate, 4,212,400, Cl. 211-41.000.
Johns-Manville: *See—*
Domanick, Edward J.; and Haskins, Lewis B., 4,212,446, Cl. 248-678.000.
Johnsen, Walter. Roll-up truck bed cover. 4,212,492, Cl. 296-98.000.
Johnson, Carl K.: *See—*
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,212,929, Cl. 429-37.000.
Johnson, Donald O., to American Can Company. Material handling apparatus. 4,212,584, Cl. 414-748.000.
Johnson, Everett A.: *See—*
Silverman, Daniel; and Johnson, Everett A., 4,213,038, Cl. 235-382.000.
Johnson, John E., Jr.: *See—*
United States of America, National Aeronautics and Space Administration; Johnson, John E., Jr.; and Swartz, Paul F., 4,212,297, Cl. 128-207.140.
Johnson, Oliver W., to Eaton Corporation. Controller for fluid pressure operated devices. 4,212,229, Cl. 91-446.000.
Johnson, Roy A., to Upjohn Company, The. Prostaglandin derivatives. 4,212,968, Cl. 542-426.000.
Johnson, Russell L., to Kimberly-Clark Corporation. Digital tampon. 4,212,301, Cl. 128-285.000.
Johnson, Walter E.: *See—*
Barton, Bruce L.; Johnson, Walter E.; and Notaro, Anthony J., 4,212,665, Cl. 75-10.00V.
Johnson, William R., Jr.: *See—*
Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., 4,212,310, Cl. 131-17.00R.
Jolliff, Norman E.: *See—*
von Kaler, Roland L.; and Jolliff, Norman E., 4,212,210, Cl. 74-375.000.

Jones, Howard: *See*—
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.

Jones, James J., to Texas Instruments Incorporated. Vehicle velocity ramp generator in a skid control vehicle braking system. 4,212,499, Cl. 303-103.000.

Jones, John L., Sr. Room occupancy power programmer. 4,213,063, Cl. 307-141.000.

Jones, Marcus C. Wiper apparatus for a viewing surface. 4,212,091, Cl. 15-250.00B.

Jones, Robert K.; and van Velthoven, Armand J., to NCR Corporation. Method for making narrow channel FET. 4,212,683, Cl. 148-1.500.

Jones, Sidney C.; Lindsay, Henry R.; and Heightman, Denis W. Color television conversion apparatus for use with a conventional domestic reproducer. 4,213,143, Cl. 358-4.000.

Jones, Walter L.; and Triest, Willard G., to Hydrasearch Co. Inc. Hose coupling. 4,212,487, Cl. 285-95.000.

Jonsson, Arne F., to Pumpex Production AB. Method and apparatus for the continuous regulation of rotary hydrodynamic pumps. 4,212,590, Cl. 417-24.000.

Joslyn Mfg. and Supply Co.: *See*—
Lusk, George E.; Mak, Sioe T.; and Haarsma, John C., 4,212,696, Cl. 156-294.000.

Juergens, Tristan D., to Gates Rubber Company, The. Driven mandrel and method. 4,212,179, Cl. 72-148.000.

Junek, Hans; and Mitteilbach, Martin, to Lonza Ltd. Process for the production of aminomalonic acid dinitrile as an aminomalonic acid dinitriltosylate precipitate or as an acetylaminomalodinitrile precipitate. 4,212,818, Cl. 260-465.400.

Jung, Lothar. Method for the manufacture of hollow fused quartz or fused silica ingots. 4,212,661, Cl. 65-18.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Kawaharazaki, Takashi, 4,212,435, Cl. 242-107.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kobayashi, Akira, 4,212,162, Cl. 60-39.630.

Kaemmer, Eduard: *See*—
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, 4,212,436, Cl. 242-192.000.

Kaganovich, Fanya L.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Beikevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.

Kaiser, Julius A., Jr., to United States of America, National Aeronautics and Space Administration. Scannable beam forming interferometer antenna array system. 4,213,131, Cl. 343-844.000.

Kaji, Kanako: *See*—
Sakurada, Ichiro; Okada, Toshio; and Kaji, Kanako, 4,212,649, Cl. 8-115.500.

Kaken Chemical Company, Limited: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.
Sasaki, Kazuya; Mitsui, Hiromi; and Onodera, Kazukiyo, 4,212,881, Cl. 424-275.000.

Kakinuma, Kazuaki, to Hitachi, Ltd. Output circuit for video tape recorder. 4,213,152, Cl. 358-186.000.

Kakutani, Nobuyasu: *See*—
Washizuka, Isamu; and Kakutani, Nobuyasu, 4,213,035, Cl. 235-92.0DN.

Kalina, Alexander I. Dynamic-compensating magnetic support apparatus. 4,212,249, Cl. 104-281.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Eibofner, Eugen; and Reich, Heinrich, 4,212,641, Cl. 433-133.000.
Loge, Hans; Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, 4,212,640, Cl. 433-82.000.

Kalugina, Iraida I.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Kaluniants, Kalust A.: *See*—
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.

Kamp, Ewald A., to Union Carbide Corporation. Closure fastening device. 4,212,337, Cl. 150-3.000.

Kanatani, Yoshiharu: *See*—
Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, 4,213,074, Cl. 313-509.000.

Kaneda, Yoshihisa, to Toyo Kogyo Co., Ltd. Automobile evaporative emission control device. 4,212,276, Cl. 123-516.000.

Kanner, Bernard: *See*—
Murphy, Gerald J.; and Kanner, Bernard, 4,212,952, Cl. 521-112.000.

Kao, David T.; and Wood, Don J., to University of Kentucky Research Foundation. Rotary feeder for solid particle injection into pressurized fluid system. 4,212,566, Cl. 406-68.000.

Kao, Ming L.: *See*—
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., 4,213,097, Cl. 330-51.000.

Karami, Hamzeh, to Colgate-Palmolive Company. Absorbent article with spaced hydrocolloid material. 4,212,302, Cl. 128-287.000.

Karas, Nicholas V.: *See*—
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.

Karlen, Urs: *See*—
Della Casa, Angelo; and Karlen, Urs, 4,212,642, Cl. 8-470.000.

Karrasch, Richard J.: *See*—
Brown, Arthur V., Jr.; and Karrasch, Richard J., 4,212,896, Cl. 426-623.000.

Kasahara, Hiroko: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

Katata, Toshinobu: *See*—
Koizumi, Kunihei; Otani, Tatu; Katata, Toshinobu; and Ueda, Takeshi, 4,212,706, Cl. 201-39.000.

Kato, Masao; and Kishida, Kosuke, to Mitsubishi Jukogyo Kabushiki Kaisha. Method and apparatus for dredging having bow-stern movement of the suction means. 4,212,121, Cl. 37-58.000.

Kato, Shogo: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,212,522, Cl. 354-25.000.

Katsueda, Mineo: *See*—
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.

Katsura, Tadahiko, to Toyo Seikan Kaisha Limited. Olefin-vinyl alcohol-vinyl acetal copolymers, process for preparation thereof and laminate structures including said copolymers. 4,212,956, Cl. 525-60.000.

Katzer, Hans: *See*—
Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, 4,212,925, Cl. 428-447.000.

Kawabata, Hideo; and Yukimasa, Tatsuaki, to Nippon Oil Seal Industry Co., Ltd. Hydrodynamic seal. 4,212,476, Cl. 277-134.000.

Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Manual lever for a vehicle. 4,212,367, Cl. 180-271.000.

Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Dual type hydraulic circuit for a vehicle brake. 4,212,498, Cl. 303-6.00C.

Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, to Sharp Kabushiki Kaisha. Thin-film electroluminescent display panel sealed by glass substrates and the fabrication method thereof. 4,213,074, Cl. 313-509.000.

Kawaharazaki, Takashi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Seatbelt retractor. 4,212,435, Cl. 242-107.000.

Kawai, Masayasu; and Ishikawa, Katsumi, to Kyowa Electronic Instruments Co., Ltd. Strain gage load converter. 4,212,197, Cl. 73-141.00A.

Kawamura, Takao; and Ishibitsu, Kokichi, to Kyoto Ceramic Kabushiki Kaisha. Silicon-semiconductor-type thermal head. 4,213,030, Cl. 219-216.000.

Kawamura, Tateo: *See*—
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, 4,212,548, Cl. 366-348.000.

Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, to Kabushiki Kaisha Suwa Seikosha. Step motor control mechanism for electronic timepiece. 4,212,156, Cl. 368-85.000.

Kawarada, Akira: *See*—
Takeuchi, Setsuo; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, 4,212,664, Cl. 71-94.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,212,687, Cl. 148-16.600.

Kawasaki Steel Corporation: *See*—
Shimizu, Yoh; Iida, Yoshiaki; Goto. Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-111.000.

Kay, Charles. Dock. 4,212,564, Cl. 405-218.000.

KDI American Products, Inc.: *See*—
Greene, Nat, 4,212,740, Cl. 210-169.000.

Keever, Joseph M.; and Lipscomb, George W., to Westinghouse Electric Corp. Integral flux lagging and light load adjustment assembly for watthour meters. 4,213,090, Cl. 324-138.000.

Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., to U.S. Philips Corporation. Gas discharge laser. 4,213,100, Cl. 331-94.50D.

Kelly, Edmund R.; and Orona, Thomas V., Sr., to Rax-Unlimited. Garment display rack. 4,212,402, Cl. 211-105.300.

Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, to Hitachi, Ltd. Method and apparatus for detecting positions of chips on a semiconductor wafer. 4,213,117, Cl. 340-146.30H.

Kempkers, Gordon B., to Prince Corporation. Covered visor mirror. 4,213,169, Cl. 362-74.000.

Kendall Company, The: *See*—
Schaar, Charles H., 4,212,296, Cl. 128-156.000.
Taylor, Glenn N., 4,212,192, Cl. 73-45.500.

Kennecke, Mario: *See*—
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,212,940, Cl. 435-55.000.

Kennedy, Howard L.; and Kingsbury, Keith M., to Motorola, Inc. Delay stabilizing system. 4,213,129, Cl. 343-6.80R.

Kenny, Andrew A.: *See*—
Douglas, Paul M.; and Kenny, Andrew A., 4,212,322, Cl. 137-625.480.
Kerner, Walter; and Schmitz, Paul, to Davy Powergas GmbH. Process for producing concentrated sulfuric acid. 4,212,855, Cl. 423-522.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.
Kerr-McGee Corporation: *See*—
Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., 4,212,849, Cl. 423-10.000.
Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I. Molding sand mixture for the manufacture of molds and cores. 4,212,677, Cl. 106-38.350.
Kholin, Vladimir G.: *See*—
Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.
Khramtsov, Viktor V.: *See*—
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.
Kieffer, Richard: *See*—
Ettmayer, Peter; and Kieffer, Richard, 4,212,671, Cl. 75-238.000.
Kiehs, Karl: *See*—
Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, 4,212,861, Cl. 424-200.000.
Kijima, Yasuhiko: *See*—
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,212,989, Cl. 560-232.000.
Kikuchi, Tsuyoshi; and Takusagawa, Kiyoshi, to Toshiba Kikai Kabushiki Kaisha. Product take out devices for use in molding machines. 4,212,622, Cl. 425-444.000.
Kim, Bong Kon: *See*—
Kim, Chin K., 4,212,125, Cl. 43-16.000.
Kim, Chin K., to Kim, Bong Kon, a part interest. Hook setting fishing rod attachment. 4,212,125, Cl. 43-16.000.
Kim, Gennady P.: *See*—
Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I., 4,212,677, Cl. 106-38.350.
Kimball, Stephen F.; and Martin, Roy C., to GTE Sylvania Incorporated. Reflector lamp with lens having light-modifying coating. 4,213,170, Cl. 362-267.000.
Kimberly-Clark Corporation: *See*—
Johnson, Russell L., 4,212,301, Cl. 128-285.000.
Kimbrough, Mahlon D., to Reliance Telecommunication Electronics Company. Failure alarm for a transmission line communications system. 4,213,015, Cl. 179-175.20C.
Kimura, Kazuo: *See*—
Yamazaki, Yasuo; and Kimura, Kazuo, 4,212,526, Cl. 354-225.000.
Kimura, Takeo: *See*—
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.
King, Edwin B.; Barnes, Wilson R.; and Pommier, Luis W., to Associated Metals & Minerals Corporation. Tin recovery. 4,212,666, Cl. 75-85.000.
King Instrument Corporation: *See*—
King, James L., 4,213,159, Cl. 360-16.000.
King, James L., to King Instrument Corporation. Pneumatic clamps and thermomagnetic duplication. 4,213,159, Cl. 360-16.000.
King, William H.: *See*—
Duvall, David S.; King, William H.; and Owczarski, William A., 4,213,026, Cl. 219-75.000.
Kingsbury, Keith M.: *See*—
Kennedy, Howard L.; and Kingsbury, Keith M., 4,213,129, Cl. 343-6.80R.
Kirkham, Arthur J., Jr. Cushion for ski lift chair. 4,212,496, Cl. 297-226.000.
Kishida, Kosuke: *See*—
Kato, Masao; and Kishida, Kosuke, 4,212,121, Cl. 37-58.000.
Kishida, Yasuo: *See*—
Morinaga, Mitsuyoshi; and Kishida, Yasuo, 4,212,490, Cl. 274-37.000.
Kishishita, Hiroshi: *See*—
Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, 4,213,074, Cl. 313-509.000.
Kissinger, Gaylord M.: *See*—
Adams, John N.; Kissinger, Gaylord M.; and Lee, Michael C., 4,212,997, Cl. 568-724.000.
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, to Seiko Koki Kabushiki Kaisha. Shutter control device for automatic focusing camera. 4,212,522, Cl. 354-25.000.
Kitano, Masao: *See*—
Mizuno, Toru; and Kitano, Masao, 4,212,472, Cl. 277-12.000.
Kito, Terukazu: *See*—
Murata, Kazuo; and Kito, Terukazu, 4,213,186, Cl. 364-723.000.
Kleager, Kenneth D.: *See*—
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., 4,213,198, Cl. 367-113.000.
Klein, Max, to Normac, Inc. Polymers of acid addition salts of methacrylic acid and a 2-mono(lower)alkylaminoethyl methacrylate. 4,212,782, Cl. 260-29.6HN.
Klemes, Martin S.: *See*—
Duncan, Damon H.; and Klemes, Martin S., 4,212,443, Cl. 244-177.000.
Kleschevnikova, Solomanida I.: *See*—
Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I., 4,212,677, Cl. 106-38.350.
Klimov, Oleg V.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Klimova, Tatyana A.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Klimsa, Ivan. Eye testing device. 4,212,520, Cl. 351-37.000.
Klockner-Humboldt-Deutz AG: *See*—
Deussner, Herbert, 4,212,850, Cl. 423-175.000.
Rao, Chatty; and Schmitz, Bruno, 4,212,608, Cl. 425-85.000.
Klopkova, Rimma S.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Klotzbucher, Hansjong; Kolb, Erwin; and Hilge, Bernhard, to Swiss Aluminium Ltd. Installation for the production of continuously cast billets. 4,212,451, Cl. 266-50.000.
Kluth, Manfred: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.
Knauer, Karl; and Pfleiderer, Hans J., to Siemens Aktiengesellschaft. Transversal filter having at least one analog shift register, and a method for its operation. 4,213,105, Cl. 333-165.000.
Knechtel, Wilhelm; and Tokiwa, Taisuke, to Canon Kabushiki Kaisha. Apparatus for supplying electrophotographic developer. 4,212,264, Cl. 118-653.000.
Kneip, George D., Jr., to Varian Associates, Inc. Cryostat for superconducting NMR spectrometer. 4,212,169, Cl. 62-45.000.
Kneip, George D., Jr., to Varian Associates, Inc. NMR Spectrometer with superconducting coil having rectangular cross-section wire. 4,213,092, Cl. 324-319.000.
Knott, Philip H. Pressure sensitive game apparatus. 4,212,468, Cl. 273-240.000.
Knotter, David G.: *See*—
Dale, John D.; and Knotter, David G., 4,212,430, Cl. 241-89.400.
Kobayashi, Akio; and Mashita, Kentaro, to Sumitomo Chemical Company, Limited. Process for producing soft resins. 4,212,961, Cl. 526-151.000.
Kobayashi, Akira, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Constant combustion engine. 4,212,162, Cl. 60-39.630.
Kobayashi, Hidehiko: *See*—
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.
Kobayashi, Ikuo: *See*—
Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,212,854, Cl. 423-247.000.
Kobayashi, Masatsune: *See*—
Imataki, Hiroyuki; Kobayashi, Masatsune; and Ohta, Tokuya, 4,212,518, Cl. 350-357.000.
Kobayashi, Takumi: *See*—
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.
Kobayashi, Toshiyuki. Heat-radiating floor board. 4,212,348, Cl. 165-49.000.
Kobelev, Nikolai N.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Koenig, Eugene W.: *See*—
Newirth, David M.; and Koenig, Eugene W., 4,212,161, Cl. 60-39.28R.
Koga, Kenji; and Terashima, Shiro, to Sumitomo Chemical Company, Limited. Novel process for asymmetric synthesis of optically active

2-alkanoyl-1,2,3,4-tetrahydro-2-naphthol compounds. 4,212,828, Cl. 568-314.000.

Kogure, Yasuzi: *See*—
Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, 4,212,523, Cl. 354-25.000.

Kohler, Henry A., to Truly Magic Products, Inc. Striper wheel assembly. 4,212,556, Cl. 401-208.000.

Kohno, Shoji: *See*—
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, 4,212,548, Cl. 366-348.000.

Koizumi, Kunihei; Otani, Tatu; Katata, Toshinobu; and Ueda, Takeshi, to Nippon Kokan Kabushiki Kaisha. Method of controlling pressure of gas circulating in the coke dry quenching apparatus. 4,212,706, Cl. 201-39.000.

Kokubu, Yoshikazu: *See*—
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.

Kolb, Erwin: *See*—
Klotzbucher, Hansjong; Kolb, Erwin; and Hilge, Bernhard, 4,212,451, Cl. 266-50.000.

Kolbe, Joachim, to Bayer Aktiengesellschaft. Liquid preparation of fatty acid/alkanolamine condensates. 4,212,749, Cl. 252-8.750.

Kolk, Erich: *See*—
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.

Kolliker, Hans P., to Ciba-Geigy AG. Transfer dye. 4,212,643, Cl. 8-470.000.

Kominami, Naoya: *See*—
Ibata, Jyoji; Fujita, Yukio; and Kominami, Naoya, 4,212,790, Cl. 260-40.00R.

Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, to Sagami Chemical Research Center. Prostaglandin precursors. 4,212,984, Cl. 560-18.000.

Kondo, Mikio, to Matsushita Electric Works, Ltd. Ultrasonic type motion detector. 4,213,196, Cl. 367-94.000.

Konig, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of cysteine-containing peptides. 4,212,796, Cl. 260-112.50R.

Konstruktie J. Lambrechts p.v.b.a.: *See*—
Beyens, Jozef, 4,212,414, Cl. 222-148.000.

Konzelman, Leroy M.: *See*—
Randvere, Fredrik V.; and Konzelman, Leroy M., 4,212,971, Cl. 544-37.000.

Koopmann, Juergen: *See*—
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.

Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., to Grumman Aerospace Corporation. Method for classifying biological cells. 4,213,036, Cl. 235-92.0PC.

Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, to Boehringer Ingelheim GmbH. 1-Aryloxy-2-hydroxy-3-[(benzimidazolin-one-substituted alkyl)-amino]-propanes and salts thereof. 4,212,877, Cl. 424-273.00B.

Korn, Marcel. Convertible light wire-rectangular wire orthodontic appliance system. 4,212,638, Cl. 433-8.000.

Koros, Robert M., to Exxon Research & Engineering Co. Method and apparatus for introducing a quench stream in upflow gas-liquid contactors. 4,212,835, Cl. 261-116.000.

Korte, Ralph J., to Champion International Corporation. Multi-angled perforated opening device. 4,212,395, Cl. 206-611.000.

Kotobuki Sangyo Kabushiki Kaisha: *See*—
Shimada, Hiroaki, 4,212,181, Cl. 72-250.000.

Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., to Amerace Corporation. Cable repair kit. 4,212,387, Cl. 206-223.000.

Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G. Apparatus for cultivating microorganisms. 4,212,949, Cl. 435-315.000.

Kozlova, Raisa G.: *See*—
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.

Krablin, James B. Anti-backflow device for sillcocks. 4,212,319, Cl. 137-614.200.

Kraft, Donald J. Hollow water-filled game toy. 4,212,460, Cl. 273-58.00B.

Kramb, Keneth D. Medical service equipment for motorcycles. 4,212,485, Cl. 280-766.000.

Krasinsky, Valentin V.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, to Wacker-Chemie GmbH. Heat insulating articles. 4,212,925, Cl. 428-447.000.

Kraus, Friedrich: *See*—
Tiefenbacher, Hubert; Kraus, Friedrich; and Matthias, Guenther, 4,212,890, Cl. 426-69.000.

Kreider, Benjamin A.; and Metalsky, William J., to Abar Corporation. Vacuum electric furnace. 4,212,633, Cl. 432-122.000.

Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., to B. K. Sweeney Manufacturing Company. Single beam torque readout and multiplier apparatus. 4,212,196, Cl. 73-136.00R.

Kroehler Mfg. Co.: *See*—
Dabney, Upton, 4,212,494, Cl. 297-69.000.

Kroh, Adolf; Fuchs, Otto; and Spietschka, Ernst, to Hoechst Aktiengesellschaft. Process for the manufacture of the gamma-crystal modification of linear trans-quinacridone. 4,212,975, Cl. 546-49.000.

Kromer, Philip F., III: *See*—
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., 4,213,097, Cl. 330-51.000.

Krone, Bernard; and Ahler, Wilhelm, to Maschinenfabriken Bernard Krone GmbH. Crop baling machines. 4,212,149, Cl. 56-341.000.

Kruckenberg, Winfried, to Bayer Aktiengesellschaft. Cationic azo dyestuffs containing oxyalkylene substituent. 4,212,803, Cl. 260-154.000.

Kruger, Wolfgang: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.

Krulik, Gerald A.: *See*—
Jameson, Melvin N.; and Krulik, Gerald A., 4,212,768, Cl. 252-441.000.

Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I. Backing device for a working roll of a roll stand. 4,212,504, Cl. 308-9.000.

Kubat, James J.: *See*—
Clements, Boyd D.; Hines, Charles E.; and Kubat, James J., 4,212,357, Cl. 172-22.000.

Kubo, Tsutomu: *See*—
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,212,837, Cl. 264-15.000.

Kudo, Hisashi: *See*—
Fujita, Yuko; and Kudo, Hisashi, 4,212,891, Cl. 426-231.000.

Kuhle, Engelbert: *See*—
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.

Kuhn, Bernhard: *See*—
Loge, Hans; Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, 4,212,640, Cl. 433-82.000.

Kuhn S.A.: *See*—
Werner, Anton, 4,212,147, Cl. 56-228.000.

Kuhnen, Gottfried, to BBC Brown, Boveri & Company, Limited. Apparatus for connecting metallic parts by means of arc fusion welding. 4,213,025, Cl. 219-73.200.

Kuintzle, Charles, Jr.; and Murphy, Joseph P., to Avco Corporation. Air pump with primary and secondary inlet flow channels. 4,212,595, Cl. 417-84.000.

Kulsa, Peter: *See*—
Fisher, Michael H.; Kulsa, Peter; and Linn, Bruce O., 4,212,880, Cl. 424-274.000.

Kuni, Asahiro: *See*—
Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, 4,213,117, Cl. 340-146.30H.

Kunise, Satoru: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,212,687, Cl. 148-16.600.

Kunzli, Roland: *See*—
Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.

Kurihara, Nobuo, to Hitachi, Ltd. Fault-detecting apparatus for controls. 4,213,175, Cl. 364-119.000.

Kurumada, Tomoyuki: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

Kuster, Ortwin: *See*—
Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.

Kusumoto, Nobuo: *See*—
Matsumura, Seiji; and Kusumoto, Nobuo, 4,213,056, Cl. 250-559.000.

Kutik, Louis F.; and Cecil, Howard E., to Security Plastics, Inc. Manually operated pump for dispensing product from a container. 4,212,332, Cl. 141-98.000.

Kuznetsov, Viktor F.: *See*—
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., to Herculite Protective Fabrics Corporation. Time color indicator. 4,212,153, Cl. 368-62.000.

Kyoto Ceramic Kabushiki Kaisha: *See*—
Kawamura, Takao; and Ishibitsu, Kokichi, 4,213,030, Cl. 219-216.000.

Kyowa Electronic Instruments Co., Ltd.: *See—*
Kawai, Masayasu; and Ishikawa, Katsumi, 4,212,197, Cl. 73-141.00A.
L. B. (Plastics) Limited: *See—*
Litchfield, Leon G.; and Hardy, Terence, 4,212,503, Cl. 308-3.600.
Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., to United States of America, Navy. Acoustic data link. 4,213,199, Cl. 367-117.000.
Lace, Robert B.: *See—*
Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., 4,212,983, Cl. 548-352.000.
LaConti, Anthony B.: *See—*
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,212,714, Cl. 204-98.000.
LaDelfa, Christopher J.; and Greene, Marvin, to Cities Service Company. Method for drying solid carbonaceous materials. 4,212,112, Cl. 34-9.000.
Lage, Karl-Heinz: *See—*
Bosse, Frank; and Lage, Karl-Heinz, 4,212,695, Cl. 156-188.000.
Lahay, Charles A., to Dart Industries Inc. Disposable forceps. 4,212,305, Cl. 128-354.000.
Laily, Andre: *See—*
Choulet, Jean-Claude; and Laily, Andre, 4,212,991, Cl. 562-480.000.
Laimer, Friedrich; and Herrmann, Herbert, to Voest-Alpine Aktiengesellschaft. Plant for refining pig iron. 4,212,453, Cl. 266-158.000.
Lambert, R. Bruce, to Santa Fe International Corporation. Jacking apparatus. 4,212,450, Cl. 254-108.000.
Lambie, Alan J.: *See—*
Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., 4,212,983, Cl. 548-352.000.
Lamontagne, Robert E.; and Scull, Jon V., to Binks Manufacturing Company. Pressure control for pumps. 4,212,591, Cl. 417-38.000.
Lang, Frederic A. Coupler for cables tensioned one end against another end. 4,212,558, Cl. 403-41.000.
Lang, Gunter: *See—*
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.
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Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, 4,213,048, Cl. 250-402.000.
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Byer, Robert L.; and Herbst, Richard L., 4,213,060, Cl. 307-426.000.
Lemelson, Jerome H. Magnetic tape cartridge transducing apparatus and method. 4,213,162, Cl. 360-85.000.
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Lenkoff, Leon G. Magic pictures. 4,212,393, Cl. 206-575.000.
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Hoyles, Ronald, 4,212,856, Cl. 424-52.000.
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Wartusch, Johann; and Fasbender, Helmut, 4,212,912, Cl. 428-209.000.
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Hart, James D.; and Lightner, Joseph C., 4,212,252, Cl. 105-406.00R.
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Schmid, Herbert; Schneider, Helmut; and Watson, Allan, 4,212,817, Cl. 260-449.00M.
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Line Fast Corporation: *See—*
DiMartino, John M., 4,212,251, Cl. 24-73.00R.
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Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.
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Lipinski, Vincent B. Window-mounted solar heating and humidifying device. 4,212,288, Cl. 126-428.000.
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Keever, Joseph M.; and Lipscomb, George W., 4,213,090, Cl. 324-138.000.
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Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.
Lisa, Joseph: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.
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Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.;

Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
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Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,212,795, Cl. 260-112.50T.
Liu, Yin-An: *See*—
Eissenberg, David M.; and Liu, Yin-An, 4,212,651, Cl. 44-1.0SR.
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Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.
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Link, Klaus; and Lochter, Werner, 4,213,173, Cl. 363-163.000.
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Logsdon Foundation, The: *See*—
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Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, 4,212,700, Cl. 156-568.000.
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Beekenkamp, Gerald, 4,212,542, Cl. 366-54.000.
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Portinari, Antonio; and Longoni, Sergio, 4,212,097, Cl. 29-450.000.
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Hardt, Peter, 4,212,978, Cl. 546-253.000.
Junek, Hans; and Mittelbach, Martin, 4,212,818, Cl. 260-465.400.
Looney, Larry D.: *See*—
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.
Lopez, Hugo A., to Zenith Radio Corporation. Method for aluminizing image display faceplates. 4,212,902, Cl. 427-64.000.
Losyakova, Lidia S.: *See*—
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.
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Arad, Avi, 4,212,465, Cl. 273-121.00A.
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, to Daimler-Benz Aktiengesellschaft. Method for continuously processing two-component paints. 4,212,545, Cl. 366-152.000.
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Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., 4,213,199, Cl. 367-117.000.
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Jenkins, Leonard E., Jr.; and Lowe, Peter R., 4,213,136, Cl. 346-139.00C.
Lube, John G. Smoke scrubbing apparatus. 4,212,656, Cl. 55-217.000.
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Gorman, Jeremy W., 4,212,750, Cl. 252-32.500.
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Lewis, Keith, 4,213,017, Cl. 200-5.00B.
Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., to Kerr-McGee Corporation. Simultaneous extraction and recovery of uranium and vanadium from wet process acids. 4,212,849, Cl. 423-10.000.
Luder, Jacques, to Societe Anonyme, Compagnie Industrielle des Telecommunications Cit-Alcatel. Half echo-suppressor for a four-wire telephone line. 4,213,014, Cl. 179-170.200.
Ludwig, Lawrence P., to United States of America, National Aeronautics and Space Administration. Circumferential shaft seal. 4,212,477, Cl. 277-193.000.
Lufkin, Lindsey D. Picture frame vase. 4,212,133, Cl. 47-41.00R.
Lui, Kenneth: *See*—
Acker, Roy M.; and Lui, Kenneth, 4,213,004, Cl. 174-151.000.
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Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, to AB Atomenergi; Atomenergikommissionen; Institutt for Atomenergi; United Kindom Atomic Energy Authority; and Valtion Teknillinen Tutkimuskeskus. Zirconium alloys. 4,212,686, Cl. 148-11.50F.
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Eaton, Jefferson O.; and Lunt, Wilbur B., 4,212,246, Cl. 102-270.000.
Lusk, George E.; Mak, Sioe T.; and Haarsma, John C., to Joslyn Mfg. and Supply Co. Method of making an organic composite electrical insulator system. 4,212,696, Cl. 156-294.000.
Lusk, Kenneth P. Transit system. 4,212,247, Cl. 104-124.000.
Lux, Robert J., Jr., to Thermodynamics Corporation. Ground level transformer unit. 4,213,111, Cl. 336-65.000.
Lydon, Bart J. Fire extinguishing waste receptacle. 4,212,407, Cl. 220-88.00R.
Lynes, Inc.: *See*—
Reardon, Daniel R., 4,212,355, Cl. 166-336.000.
Stone, William B.; and Holbert, Marvin L., Jr., 4,212,562, Cl. 405-195.000.
Lyons, Peter B.: *See*—
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.
Lysaght, Michael J.: *See*—
Solomon, Barry A.; and Lysaght, Michael J., 4,212,742, Cl. 210-247.000.
M&T Chemicals Inc.: *See*—
Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., 4,212,810, Cl. 260-340.50R.
Gitlitz, Melvin H.; Engelhart, John E.; and Mery, Carlos M., 4,212,885, Cl. 424-288.000.
Maab, Horst-Dieter: *See*—
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Mabery, Thomas L., to Combustion Engineering, Inc. Upsetting of tube ends. 4,212,183, Cl. 72-318.000.
Mache, Gerhard R.: *See*—
Perna, Jiulio E.; and Mache, Gerhard R., 4,213,013, Cl. 179-98.000.
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Jellesma, Anne, 4,212,745, Cl. 210-401.000.
MacMillan, Kenneth T. Rimless, production mold. 4,212,604, Cl. 425-19.000.
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Genest, Leonard J.; and Madenlian, Vache B., 4,213,118, Cl. 340-149.00R.
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Maeda, Hiroshi: *See*—
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Maehara, Kazuo: *See*—
Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, 4,212,624, Cl. 425-548.000.
Magerlein, Barney J., to Upjohn Company, The. Bicyclic lactone intermediates. 4,212,811, Cl. 260-343.30P.
Magerlein, Barney J., to Upjohn Company, The. cis-4,5-Didehydro-16-phenoxy-PGE$_1$ compounds. 4,212,985, Cl. 560-53.000.
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Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.
Magori, Valentin, to Siemens Aktiengesellschaft. Circuit arrangement of an ultrasonic-presence motion detector, particularly for a non-contact control of a water faucet. 4,213,197, Cl. 367-94.000.
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Bencze, Gyorgy; and Hamori, Andras, 4,212,536, Cl. 356-71.000.
Mahaffey, Redge A.; Goldstein, Shyke A.; Golden, Jeffry; and Cooperstein, Gerald, to United States of America, Navy. Rod pinch diode. 4,213,073, Cl. 313-310.000.
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Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., 4,212,168, Cl. 60-661.000.
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Maiman, Theodore H., to Laser Video, Inc. Scanning system for light beam displays. 4,213,146, Cl. 358-63.000.
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Mak, Sioe T.: *See*—
Lusk, George E.; Mak, Sioe T.; and Haarsma, John C., 4,212,696, Cl. 156-294.000.
Makarov, Sergei P.: *See*—
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.
Makeev, Igor M.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.
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Makihira, Hiroshi: *See*—
Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, 4,213,117, Cl. 340-146.30H.
Makino, Yoshimi; and Okamoto, Tsutomu, to Sony Corporation. Alloy for magnetoresistive element and method of manufacturing the same. 4,212,688, Cl. 148-31.550.
Makow, David M.: *See*—
Sanders, Corey L.; and Makow, David M., 4,212,535, Cl. 356-51.000.
Malloy, Thomas P.: *See*—
Halter, Mark A.; and Malloy, Thomas P., 4,212,710, Cl. 204-78.000.
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Malucci, Robert D.; and Reynolds, Charles E., to AMP Incorporated. Electrical connections for conductors in thin substrates. 4,212,511, Cl. 339-276.00T.
Mann, Friedrich H.: *See*—
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,213,078, Cl. 320-2.000.
Manno, Anthony C., to Manno, Anthony C. Fiberglass airconditioner air pre-cooler. 4,212,172, Cl. 62-305.000.
Marchak, Roman O.; and Verner, Douglas R., to Bendix Corporation, The. Closed loop sensor condition detector. 4,213,180, Cl. 364-431.000.
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Market Forge, Division of Beatrice Foods Co.: *See*—
Lombard, Paul W., 4,212,093, Cl. 16-35.00D.
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., to Chloride Silent Power Limited. Current collector for electrochemical cells and method of making. 4,212,933, Cl. 429-122.000.
Marks, Burton W.: *See*—
Noble, Robert T.; Penz, Perry A.; and Marks, Burton W., 4,212,159, Cl. 368-82.000.
Marlboro Marketing, Inc.: *See*—
Merl, Milton J., 4,212,506, Cl. 312-118.000.
Marquis, Edward T.; and Brader, Walter H., Jr., to Texaco Development Corporation. Process of making diaminodiphenylmethanes. 4,212,821, Cl. 260-570.00D.
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Marti, Bernard: *See*—
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.
Martija, Henry M.: *See*—
Shum, Edward K.; Martija, Henry M.; and Head, Leon E., 4,213,160, Cl. 360-73.000.
Martin, Roy C.: *See*—
Kimball, Stephen F.; and Martin, Roy C., 4,213,170, Cl. 362-267.000.
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Maruoka, Hiroyuki. Air fuel supply system and oxygen sensor therefor. 4,212,273, Cl. 123-438.000.
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Degenhardt, Karl-Heinz; Marx, Gerhard; and Frank, Hermann, 4,212,655, Cl. 55-181.000.
Maschinenfabriken Bernard Krone GmbH: *See*—
Krone, Bernard; and Ahler, Wilhelm, 4,212,149, Cl. 56-341.000.
Mashita, Kentaro: *See*—
Kobayashi, Akio; and Mashita, Kentaro, 4,212,961, Cl. 526-151.000.
Mason, Paul B., to Polaroid Corporation. Photographic film cassette having pressure pad and nozzle arrangement. 4,212,528, Cl. 354-317.000.
Masuyama, Yasushi: *See*—
Nagasaka, Yasumasa; Sekiyama, Kenichi; and Masuyama, Yasushi, 4,212,629, Cl. 432-10.000.
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Lee, Norman J., 4,212,454, Cl. 269-328.000.
Matoba, Isao: *See*—
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-1.1.000.
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Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, to Mitsui Petrochemical Industries Ltd. Thermoplastic elastomer composition, blends of the composition with olefin plastic, and foamed products of the composition and the blends. 4,212,787, Cl. 260-33.6AQ.
Matsuhira, Seikichi: *See*—
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhira, Seikichi, 4,212,990, Cl. 560-241.000.
Matsui, Isamu; and Suganuma, Buro, to Murata Kikai Kabushiki Kaisha. Cop supplying apparatus for automatic winding machine. 4,212,433, Cl. 242-35.50A.
Matsui, Katsuaki: *See*—
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Kondo, Mikio, 4,213,196, Cl. 367-94.000.
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Maurer, Robert D., to Corning Glass Works. Method for making multiple mode waveguide having cylindrical perturbations. 4,212,660, Cl. 65-3.00A.
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Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.
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Cagan, Bernard J.; and McQuary, Kenneth L., 4,212,285, Cl. 124-67.000.
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Medtronic, Inc.: *See*—
Athearn, Lee F., 4,212,930, Cl. 429-101.000.
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Jimenez, Antonio, 4,212,256, Cl. 112-240.000.

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Chyung, Kenneth; and Megles, John E., Jr., 4,212,678, Cl. 106-39.700.
Melotti, Angelo R., to Bendix Corporation, The. Economy throttle body for hot fuel handling. 4,212,277, Cl. 123-343.000.
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Mentrup, Anton: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.
Merck & Co., Inc.: *See*—
Fisher, Michael H.; Kulsa, Peter; and Linn, Bruce O., 4,212,880, Cl. 424-274.000.
Prugh, John D., 4,212,871, Cl. 424-267.000.
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Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.
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Merten, Rudolf: *See*—
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,212,982, Cl. 548-313.000.
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Gitlitz, Melvin H.; Engelhart, John E.; and Mery, Carlos M., 4,212,885, Cl. 424-288.000.
Messer Griesheim GmbH: *See*—
Soecknick, Erhard, 4,212,171, Cl. 62-63.000.
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Gammon, Michael W.; and Harris, Colin F., 4,212,667, Cl. 75-86.000.
Metalsky, William J.: *See*—
Kreider, Benjamin A.; and Metalsky, William J., 4,212,633, Cl. 432-122.000.
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Stocker, Rudolf, 4,212,361, Cl. 177-200.000.
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Michelotti, Paul E. Bladder molding. 4,212,621, Cl. 425-405.00H.
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Mikina, Stanley J. Heat engine. 4,212,163, Cl. 60-39.630.
Mikina, Stanley J.; and Mikina, John A. Convertible exercise bicycle. 4,212,480, Cl. 280-226.00R.
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Borglum, Gerald B., 4,212,943, Cl. 435-180.000.
Buckler, Robert T.; and Schroeder, Hartmut R., 4,212,805, Cl. 260-326.00N.
Miles, Peter D.: *See*—
Durant, Graham J.; and Miles, Peter D., 4,212,875, Cl. 424-273.00R.
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Miller, Edward B.: *See*—
Eichelberger, Charles W.; and Miller, Edward B., 4,213,182, Cl. 364-493.000.
Miller, Fredric N., to American Can Company. Fiber distributor. 4,212,607, Cl. 425-83.100.
Miller, Gabriel L.: *See*—
English, Alan T.; and Miller, Gabriel L., 4,213,087, Cl. 324-62.000.
Miller, Richard A., to Hydroscience, Inc. Destruction method for the wet combustion of organics. 4,212,735, Cl. 210-63.00R.
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Wise, Layton A., 4,212,846, Cl. 422-122.000.
Miner, Robert C., to International Harvester Company. Crop deflector control. 4,212,142, Cl. 56-14.400.
Minicozzi, Al, to IMW Industries, Inc. Cutting tool. 4,212,568, Cl. 407-53.000.
Minnesota Mining and Manufacturing Company: *See*—
Giampieri, Claudio, 4,212,936, Cl. 430-503.000.
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Suzuki, Hidenori, 4,212,532, Cl. 355-60.000.
Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, 4,212,523, Cl. 354-25.000.
Yamazaki, Yasuo; and Kimura, Kazuo, 4,212,526, Cl. 354-225.000.
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Lawrence, Victor B.; and Mitra, Debasis, 4,213,187, Cl. 364-724.000.
Mitrofanov, Boris V.: *See*—
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.
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Fukami, Akira; and Nakajima, Hiroyuki, 4,212,959, Cl. 525-524.000.
Hayashi, Osamu; Okahashi, Kazuo; and Ono, Hiroshi, 4,212,960, Cl. 525-524.000.
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,212,989, Cl. 560-232.000.
Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, 4,212,951, Cl. 528-495.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Kato, Masao; and Kishida, Kosuke, 4,212,121, Cl. 37-58.000.
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Sasaki, Kazuya; Mitsui, Hiromi; and Onodera, Kazukiyo, 4,212,881, Cl. 424-275.000.
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Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, 4,212,787, Cl. 260-33.6AQ.
Shiraki, Shigemi, 4,212,995, Cl. 562-485.000.
Mitsunori, Hiromi: *See*—
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-111.000.
Mittelbach, Martin: *See*—
Junek, Hans; and Mittelbach, Martin, 4,212,818, Cl. 260-465.400.
Mittelmann, Gerhard, to Swiss Aluminium Ltd. Container, in particular for transporting freight by air. 4,212,406, Cl. 220-1.500.
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, to Takenaka Komuten Company, Limited. Apparatus and method for treating sludge deposits. 4,212,548, Cl. 366-348.000.
Miyahara, Akio: *See*—
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, 4,212,783, Cl. 260-29.60H.
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Vehicular anti-skid brake device. 4,212,501, Cl. 303-116.000.
Miyake, Hidekazu: *See*—
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.
Miyauchi, Yuh: *See*—
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,212,989, Cl. 560-232.000.
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, to Kaken Chemical Company, Limited. Method of producing salinomycin antibiotics. 4,212,942, Cl. 435-119.000.
Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, to Honda Giken Kogyo Kabushiki Kaisha. Lawn mower. 4,212,141, Cl. 56-11.800.
Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, to Ebara Manufacturing Company, Limited. Process for recovery of chemicals from pulping waste liquor. 4,212,702, Cl. 162-36.000.
Mizuguchi, Shunji: *See*—
Tanaka, Minoru; Yagi, Kenkichi; and Mizuguchi, Shunji, 4,212,916, Cl. 428-290.000.
Mizukami, Etsuo: *See*—
Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, 4,213,074, Cl. 313-509.000.
Mizuno, Toru; and Kitano, Masao, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Seal assembly for rotary heat-exchanger. 4,212,472, Cl. 277-12.000.
Mobil Oil Corporation: *See*—
Chibnik, Sheldon, 4,212,754, Cl. 252-49.700.
Demmel, Edward J., 4,212,728, Cl. 208-121.000.
Horodysky, Andrew G., 4,212,753, Cl. 252-46.600.
Martinez, Carlos J.; and Tobias, Michael A., 4,212,776, Cl. 260-18.0EP.
Mock, James H.: *See*—
Parker, Ralph M.; and Mock, James H., 4,212,398, Cl. 209-590.000.
Moeglich, Karl, to Innova, Inc. Oxidation and coagulation for aquarium applications. 4,212,724, Cl. 204-273.000.
Mohri, Michihiro: *See*—
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, 4,212,783, Cl. 260-29.60H.
Molychem, Inc.: *See*—
Murphy, William C.; and Myers, Lyle G., 4,212,372, Cl. 184-15.00B.
Monsanto Company: *See*—
Hirzy, John W., 4,212,957, Cl. 525-131.000.

Montedison S.p.A.: *See*—
Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, 4,212,967, Cl. 528-500.000.
Montoya, Lawrence C.: *See*—
Bikle, Paul F.; and Montoya, Lawrence C., 4,212,199, Cl. 73-861.660.
Moody, Victor: *See*—
Chandler, Arthur R.; and Moody, Victor, 4,212,212, Cl. 81-57.170.
Moore Business Forms, Inc.: *See*—
Allen, Robert H.; and Robertson, Victor J., 4,212,396, Cl. 206-629.000.
Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., to University of California, The Regents of the. Separation of isotopes by photo-induced predissociation. 4,212,717, Cl. 204-158.00R.
Moore, George G.I., to Riker Laboratories, Inc. Substituted thiophenes. 4,212,882, Cl. 424-275.000.
Moore, Roger H.: *See*—
Reed, James S.; and Moore, Roger H., 4,212,924, Cl. 428-428.000.
Moorehead, Harvey R., to Ballard Medical Products, Inc. Blood gas sampler. 4,212,309, Cl. 128-766.000.
Moravec, John V.: *See*—
Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., 4,213,189, Cl. 364-100.000.
Morche, Klaus: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Morcom, Richard, to Hughes Microelectronics Limited. Device for providing a selectively variable proportion of an electrical signal. 4,213,065, Cl. 307-251.000.
Morgardshammar Aktiebolag: *See*—
Wallin, Hans-Henrik B.; and Ericsson, Eric R., 4,212,731, Cl. 209-366.500.
Mori, Eiko: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Morimoto, Takao: *See*—
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.
Morimura, Syoji: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
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Morino, Yukio: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,212,522, Cl. 354-25.000.
Morioke, Yukitoshi: *See*—
Campbell, George T. R.; and Morioke, Yukitoshi, 4,212,404, Cl. 212-238.000.
Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., to Andover Controls Corporation. Programmable sequence controller with drum emulation and improved power-down power-up circuitry. 4,213,174, Cl. 364-104.000.
Mortensen, LaVaugh L. Prosthetic leg with a hydraulic control. 4,212,087, Cl. 3-1.200.
MOS Technology, Inc.: *See*—
Paivinen, John; Eisenhower, Walter D., Jr.; and Helfrich, Ernest R., 4,212,100, Cl. 29-571.000.
Motoren-Werke Mannheim AG: *See*—
Eisinger, Norbert; Wesch, Paul; and Dzsida, Matthias, 4,212,278, Cl. 123-319.000.
Motorola, Inc.: *See*—
Buxton, Howard D., 4,212,265, Cl. 118-700.000.
Davidson, Allen R., 4,213,132, Cl. 343-854.000.
Kennedy, Howard L.; and Kingsbury, Keith M., 4,213,129, Cl. 343-6.80R.
Muri, David L.; and Doyle, James T., 4,213,185, Cl. 364-721.000.
Townsend, Greg M., 4,213,058, Cl. 307-40.000.
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, to BASF Aktiengesellschaft. Catalyst for the manufacture of ethylene oxide. 4,212,772, Cl. 252-476.000.
Muacevic, Gojko: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.
Mucciardi, Anthony N.: *See*—
Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., 4,213,183, Cl. 364-507.000.
Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., to Admiral Corporation. Reactive computer system adaptive to a plurality of program inputs. 4,213,189, Cl. 364-100.000.
Muenchow, Juergen; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Process for improving image quality in picture telegraphy. 4,213,155, Cl. 358-262.000.
Mues, Volker: *See*—
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, 4,212,809, Cl. 260-340.50R.
Mulder, Willem; Vaessen, Dorotheus C. L.; and De Lange, Nicolaas H., to Hollandse Signaalapparaten B.V. Airport surface detection equipment (ASDE). 4,213,126, Cl. 343-5.0SM.
Muller, Rudolf: *See*—
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,212,940, Cl. 435-55.000.
Muller, Werner H., to Hoechst Aktiengesellschaft. Process for the manufacture of 3-aminophenols by dehydrogenation of 3-aminocyclohexenones. 4,212,823, Cl. 260-571.000.
Mullersman, Ferdinand H., to General Electric Company. Battery charger adapter. 4,213,079, Cl. 320-2.000.
Mulvey, Dennis M.: *See*—
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.
Munter, Ernst A.: *See*—
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.
Murakami, Kimio, to Sakura Color Products Corporation. Crayon compositions. 4,212,786, Cl. 260-31.20R.
Murata, Kazuo; and Kito, Terukazu, to Oki Electric Industry Co., Ltd. Pulse interpolation system. 4,213,186, Cl. 364-723.000.
Murata Kikai Kabushiki Kaisha: *See*—
Matsui, Isamu; and Suganuma, Buro, 4,212,433, Cl. 242-35.50A.
Murata Manufacturing Co., Ltd.: *See*—
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, to Sankyo Company Limited. Piperidine derivatives. 4,212,974, Cl. 546-19.000.
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for the electrolytic treatment of alkali metal halide solution using ion exchange membranes. 4,212,712, Cl. 204-98.000.
Muri, David L.; and Doyle, James T., to Motorola, Inc. Microprocessor tone synthesizer with reduced quantization error. 4,213,185, Cl. 364-721.000.
Murphy, Clarence R.: *See*—
Boehme, Robert E.; and Murphy, Clarence R., 4,212,848, Cl. 422-267.000.
Murphy, Frank P. Orthopedic fracture fixation device. 4,212,294, Cl. 128-92.0BC.
Murphy, Gerald J.; and Kanner, Bernard, to Union Carbide Corporation. N,N,N',N'-Tetramethyl-α,ω-polymethlenediamines as catalysts for the preparation of urethane foams. 4,212,952, Cl. 521-112.000.
Murphy, Joseph P.: *See*—
Kuintzle, Charles, Jr.; and Murphy, Joseph P., 4,212,595, Cl. 417-84.000.
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Fukami, Akira; and Nakajima, Hiroyuki, 4,212,959, Cl. 525-524.000.
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McClain, Dorothee M., 4,212,966, Cl. 528-486.000.

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Bennett, Richard N., 4,212,416, Cl. 222-267.000.

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Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.

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Hotchkiss, Philip; Gipson, Robert M.; and Nieh, Edward C. Y., 4,212,820, Cl. 260-561.00N.

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Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

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Hasegawa, Ryoichi, 4,212,813, Cl. 260-346.400.

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Ina, Yoshifumi, 4,212,601, Cl. 417-365.000.
Mizuno, Toru; and Kitano, Masao, 4,212,472, Cl. 277-12.000.

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Fujii, Masayuki, 4,212,484, Cl. 280-707.000.
Inoue, Mitsumasa, 4,212,275, Cl. 123-549.000.

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Snyder, Joe W., 4,212,295, Cl. 128-138.00A.

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Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, 4,212,697, Cl. 427-389.800.

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Avedesian, Michael M.; and Holko, Anthony P., 4,212,722, Cl. 204-222.000.

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Klein, Max, 4,212,782, Cl. 260-29.6HN.

North, John W. Process and apparatus for producing cellulated vitreous refractory material in prescribed shapes and products therefrom. 4,212,635, Cl. 432-239.000.

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Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.

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Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.

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Robinson, Guner S.; and Reis, James J., 4,213,150, Cl. 358-166.000.

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Rue, Charles V., 4,212,137, Cl. 51-206.400.

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Chahine, M. Helmy; and Brothers, J. Alfred, 4,212,892, Cl. 426-289.000.

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Ciaccio, Leonard L., 4,212,761, Cl. 252-174.120.

Nugent, Duane C., to Owens-Illinois, Inc. Modular tubular solar energy collector apparatus. 4,212,293, Cl. 126-450.000.

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Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.

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O'Brien, Robert J.; and Stryjewski, Walter A., to Eastman Kodak Company. Apparatus for producing duplex copies. 4,212,529, Cl. 355-3.00R.

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Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.

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Winkler, Otto, 4,212,170, Cl. 62-55.500.

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Ohe, Takeshi: *See—*
Ohtuka, Tadao; Ohe, Takeshi; and Hamano, Kunihiro, 4,212,366, Cl. 180-141.000.

Ohga, Shoichiro: *See—*
Iida, Yoshiya; and Ohga, Shoichiro, 4,213,086, Cl. 324-62.000.

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Schnell, Georg; Hammon, Fritz; and Ohlinger, Manfred, 4,212,903, Cl. 427-127.000.

Ohnishi, Ryoichi: *See*—
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Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, 4,212,500, Cl. 303-115.000.

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Ohtani, Yoshio, to Diesel Kiki Co., Ltd. Electronic-mechanical governor for diesel engines. 4,212,279, Cl. 123-352.000.

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Hayashi, Osamu; Okahashi, Kazuo; and Ono, Hiroshi, 4,212,960, Cl. 525-524.000.

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Makino, Yoshimi; and Okamoto, Tsutomu, 4,212,688, Cl. 148-31.550.

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Shiba, Haruo; and Okamura, Masatoshi, 4,212,437, Cl. 242-199.000.

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Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.

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Murata, Kazuo; and Kito, Terukazu, 4,213,186, Cl. 364-723.000.

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Nakanishi, Kiyoshi; and Okumura, Takeshi, 4,212,270, Cl. 123-41.090.

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Fujii, Toru, 4,212,517, Cl. 350-217.000.
Itaya, Hideo, 4,212,515, Cl. 350-175.0ML.
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Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, 4,212,141, Cl. 56-11.800.

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Sasaki, Kazuya; Mitsui, Hiromi; and Onodera, Kazukiyo, 4,212,881, Cl. 424-275.000.

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Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, 4,212,760, Cl. 252-156.000.

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Valenzona, Joseph F., 4,212,408, Cl. 220-254.000.

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Kelly, Edmund R.; and Orona, Thomas V., Sr., 4,212,402, Cl. 211-105.300.

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Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

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Vollbrecht, Rolf; and Ostertag, Karl, 4,212,915, Cl. 428-288.000.

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Duvall, David S.; King, William H.; and Owczarski, William A., 4,213,026, Cl. 219-75.000.

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Seng, Stephen, 4,212,613, Cl. 425-141.000.

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Nugent, Duane C., 4,212,293, Cl. 126-450.000.
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Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.

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Tarzia, Giorgio; and Panzone, Gianbattista, 4,212,806, Cl. 260-326.200.

Parker, Frederick D.: *See*—
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Wolfelsperger, Robert O.; and Pasco, William R., 4,212,213, Cl. 83-56.000.

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Funk, Gerhard, 4,213,007, Cl. 375-10.000.

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Pavlak, Archibald W. Hearth structure. 4,212,636, Cl. 432-250.000.

Pawling, Paul G.: *See*—
Cecka, Andrew M.; and Pawling, Paul G., 4,212,461, Cl. 273-73.00F.

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PDM Electrical Products Ltd.: *See*—
Deacey, Peter, 4,213,059, Cl. 307-41.000.

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Bernardin, Jacques A. N.; and Pechmeze, Jacques P. E., 4,212,647, Cl. 8-662.000.

Pecori, Peter M., to United States of America, Army. Portable buried object detection system with error reducing signal processing. 4,213,093, Cl. 324-329.000.

Pedicano, Ernest A.: *See*—
Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., 4,212,153, Cl. 368-62.000.

Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., to Liquichimica Robassomero S.p.A.; and Vsesoiuznis Nauchij Issledovatelskj Institut Po Pererabotke Nefti Vniinp. Improved process for the production of an additive for lubricating oils and related product. 4,212,752, Cl. 252-42.700.

Peecock, Charles P. R.: *See*—
Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., 4,212,259, Cl. 115-73.000.

Pelouch, Milan S., to Fansteel Inc. Dart body. 4,212,464, Cl. 273-416.000.

Pelz, Lothar: *See*—
Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.

Pemberton, Eugene B.: *See*—
Fahl, Richard L.; and Pemberton, Eugene B., 4,212,315, Cl. 137-377.000.

Pemper, Steven J. Device for forming holes in a foundry sand mold. 4,212,345, Cl. 164-149.000.

Penick, Ib; and Volkert, John K., to Compak Systems Inc. Method of making a promotional novelty device. 4,212,231, Cl. 93-1.00F.

Penney, William H. Shoe mounting apparatus. 4,212,399, Cl. 211-35.000.

Penz, Perry A.: *See*—
Noble, Robert T.; Penz, Perry A.; and Marks, Burton W., 4,212,159, Cl. 368-82.000.

Peppler, Michael S.: *See*—
Ritchie, Leon T.; and Peppler, Michael S., 4,212,510, Cl. 339-147.00R.

Percarpio, Edward P., to Becton, Dickinson and Company. Parallel-flow one-way blood sampling device. 4,212,308, Cl. 128-766.000.

Pereskokova, Ida I.: *See*—
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

Peri, Paolo: *See*—
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Perna, Jiulio E.; and Mache, Gerhard R., to Bunker Ramo Corporation. Telephone network/subscriber interface device. 4,213,013, Cl. 179-98.000.

Pernick, Benjamin J.: *See*—
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

Perrotta, Kenneth A., to Whatman Reeve Angel Limited. Method and apparatus for determining oil mist in compressed air. 4,213,044, Cl. 250-301.000.

Perry, Donald D.: *See*—
Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., 4,212,387, Cl. 206-223.000.

Persson, Anders E., to Sandvik Aktiebolag. Means for connecting a male part with a female part. 4,212,559, Cl. 403-348.000.

Pervushin, Evgeny S.: *See*—
Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.

Pery, Remy: *See*—
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.

Pet Incorporated: *See*—
Parker, Ralph M.; and Mock, James H., 4,212,398, Cl. 209-590.000.

Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, to Dynamit Nobel Aktiengesellschaft. Process for the side-chain chlorination of perhalogenated methyl aromatic compounds. 4,212,996, Cl. 568-639.000.

Petersen, Poul: *See*—
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.

Peterson, Laurel L.; and Hickman, Alan J., to Caterpillar Tractor Co. Aligning apparatus for material handling system. 4,212,375, Cl. 187-9.00R.

Petrillo, Vincenzo: *See*—
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Petrolite Corporation: *See*—
Hartke, Francis J., 4,212,842, Cl. 422-12.000.
Oude Alink, Bernardus A., 4,212,843, Cl. 422-16.000.
Quinlan, Patrick M., 4,212,764, Cl. 252-392.000.
Redmore, Derek; and Welge, Frederick T., 4,212,734, Cl. 210-58.000.

Petrova, Mira P.: *See*—
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Pfeiffer, Hans C., to International Business Machines Corporation. Electron beam system with character projection capability. 4,213,053, Cl. 250-492.00A.

Pfizer Inc.: *See*—
Andrews, Glenn C., 4,212,988, Cl. 560-174.000.
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.

Pfleiderer, Hans J.: *See*—
Knauer, Karl; and Pfleiderer, Hans J., 4,213,105, Cl. 333-165.000.

Pflieger, Bernard: *See*—
Cadart, Francois; and Pflieger, Bernard, 4,212,931, Cl. 429-104.000.

Philagro: *See*—
Boesch, Roger, 4,212,867, Cl. 424-263.000.

Philip Morris Incorporated: *See*—
Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., 4,212,310, Cl. 131-17.00R.

Philippe, Joel: *See*—
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.

Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., to Albright & Wilson Limited. Manufacture of imidazoline compounds. 4,212,983, Cl. 548-352.000.

Phillips, Evan M. Pulsator valves. 4,212,325, Cl. 137-627.500.

Phillips, Kenneth G.; and Bingham, Mary E., to Nalco Chemical Co. Polymerization of water soluble polymers in water-in-oil latex form to produce emulsions containing high polymer solids levels and low oil levels. 4,212,784, Cl. 260-29.6WQ.

Phillips Petroleum Company: *See*—
Brady, Donnie G., 4,212,923, Cl. 428-419.000.
Campbell, Robert W., 4,212,964, Cl. 528-340.000.
Campbell, Robert W., 4,212,965, Cl. 528-340.000.
Shue, Robert S., 4,212,793, Cl. 260-45.85T.
Swanson, Billy L., 4,212,747, Cl. 252-8.55R.
Tieszen, Dale O., 4,212,922, Cl. 428-419.000.

Pickett, John A.: *See*—
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.

Pieper, Helmut, to Sorg GmbH & Co. KG. Electrically heated melting furnace for mineral materials. 4,213,002, Cl. 13-6.000.

Pierce, Leslie C. Rear bumper rolling loader. 4,212,581, Cl. 414-529.000.

Pietro Laverda S.P.A.: *See*—
Raineri, Giuseppe, 4,212,144, Cl. 56-15.800.

Pinazzi, Christian; Lenain, Jean-Claude; and Brosse, Jean-Claude, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for producing hydroxytelechelic oligomers and polymers by photolysis. 4,212,718, Cl. 204-159.230.

Pinckney, Robert L., to Boeing Company, The. Resilient flanged wheel. 4,212,491, Cl. 295-11.000.

Pines, Michael Y., to Hughes Aircraft Company. Monolithic variable size detector. 4,213,137, Cl. 357-30.000.

Pinette-Emidecau S.A.: *See*—
Pinette, Gerard, 4,212,241, Cl. 100-116.000.

Pinette, Gerard, to Pinette-Emidecau S.A. Process of extracting juice from a sample of liquid-containing matter such as sugarcane and an extractor press. 4,212,241, Cl. 100-116.000.

Pinson, George T., to Boeing Company, The. Apparatus for forming sheet metal. 4,212,188, Cl. 72-413.000.

Pipe Line Tech., Inc.: *See*—
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.

Piper, George F.; Vesperman, William C.; and Wilson, Max K., to Western Electric Company, Inc. Apparatus for enclosing a plurality of conductors in a partitioned jacket. 4,212,612, Cl. 425-114.000.

Piston, Thomas P., to Crouse-Hinds Company. Explosion-proof contact assembly and method of forming the same. 4,213,018, Cl. 200-51.120.

Pitts, Robert W., Jr., to Texaco Inc. Means and method for printing on light sensitive material. 4,212,530, Cl. 355-14.00R.

Placo Products Company: *See*—
Cagan, Bernard J.; and McQuary, Kenneth L., 4,212,285, Cl. 124-67.000.

Plaxin, Evgeny K.: *See*—
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Plessey Handel und Investments AG: *See*—
Cooper, Paul V., 4,213,091, Cl. 324-210.000.
Reid, Douglas C. J.; and Waterworth, Peter, 4,213,193, Cl. 365-125.000.
Taylor, Brian P.; Davis, David J.; and Wasdell, Roy N., 4,212,469, Cl. 274-23.00A.

Pluss-Staufer AG: *See*—
Strauch, Dieter, 4,212,674, Cl. 106-14.050.

Podgorski, Jan, to INTERATOM Internationale Atomreaktorbau GmbH. Oxygen filled, sealed housing for piezoceramic electroacoustic transducer. 4,213,071, Cl. 310-344.000.

Poignet, Alain: *See—*
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.
Poirier, J. Leon, to United States of America, Air Force. Integral enable-disable means for guided wave radar intrusion detector system portals. 4,213,123, Cl. 340-552.000.
Polaroid Corporation: *See—*
Douglas, Lawrence M., 4,212,524, Cl. 354-86.000.
Fischer, Richard V., 4,212,527, Cl. 354-275.000.
Mason, Paul B., 4,212,528, Cl. 354-317.000.
Stella, Joseph A., 4,212,521, Cl. 352-130.000.
Policand, Gerard; Trompette, Jacques; and Bourrinet, Francis. Pseudo-random binary sequence generator. 4,213,101, Cl. 331-78.000.
Pollitzer, Ernest L.: *See—*
Hayes, John C.; and Pollitzer, Ernest L., 4,212,770, Cl. 252-441.000.
Polydent SA: *See—*
Schaffner, Alfred, 4,212,639, Cl. 433-72.000.
Pommier, Luis W.: *See—*
King, Edwin B.; Barnes, Wilson R.; and Pommier, Luis W., 4,212,666, Cl. 75-85.000.
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I. Electroinsulating material. 4,212,914, Cl. 428-268.000.
Ponomareva, Nina V.: *See—*
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.
Popova, Galina I.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.
Poprygo, Galina G.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.
Porteous, Don D. Tiltable power blender for dental impression materials. 4,212,546, Cl. 366-213.000.
Portinari, Antonio; and Longoni, Sergio, to Industrie Pirelli S.p.A. Method and apparatus for manufacturing optical cable elements. 4,212,097, Cl. 29-450.000.
Potosky, Milton J.; and Rohrbacher, Peter J., to Congoleum Corporation. Methods and apparatus for making decorative inlaid types of resilient sheet materials and the like. 4,212,691, Cl. 156-79.000.
Poynton, Bertram G.; and Waite, Phillip S., to Ti Fords Limited. Apparatus for restoring distorted articles to their true cross-sectional shape. 4,212,140, Cl. 53-289.000.
Pratt, Enoch B.: *See—*
Repinski, Robert J.; and Pratt, Enoch B., 4,212,463, Cl. 273-418.000.
Pratt & Lambert, Inc.: *See—*
Wolinski, Leon E.; and Berezuk, Peter D., 4,212,921, Cl. 428-414.000.
Pray, Winston C., to Flexible Steel Lacing Company. Belt fasteners. 4,212,094, Cl. 24-31.00B.
Precisa AG Rechenmaschinenfabrik, Firma: *See—*
Gelling, Helmut, 4,212,554, Cl. 400-550.000.
Pridham, Roger G., to Raytheon Company. Sonic direction system. 4,213,195, Cl. 367-92.000.
Prince Corporation: *See—*
Kempkers, Gordon B., 4,213,169, Cl. 362-74.000.
Privalov, Vladimir A.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Bernardin, Jacques A. N.; and Pechmeze, Jacques P. E., 4,212,647, Cl. 8-662.000.
Promonenkov, Viktor K.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Propper Manufacturing Co., Inc.: *See—*
Raczkowski, Jan; and Speelman, Irving A., 4,212,390, Cl. 206-339.000.
Protasova, Ljudmila D.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Prudden, John F.: *See—*
Balassa, Leslie L.; and Prudden, John F., 4,212,857, Cl. 424-95.000.
Pruett, Lloyd L. Hydraulic brake system. 4,212,167, Cl. 60-594.000.
Prugh, John D., to Merck & Co., Inc. Appetite stimulating and antihistaminic 3-hydroxymethylcyproheptadine and analogs. 4,212,871, Cl. 424-267.000.
Prunier, Jean-Claude; and Bellemon, Yves, to Societe Nouvelle de Connexion. Connectors for optical conductors utilizing elastomeric pads. 4,212,514, Cl. 350-96.210.
Prussin, Samuel: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,212,897, Cl. 427-2.000.
Pryor, Leroy W. Electric motor. 4,213,069, Cl. 310-46.000.
Prysby, Daniel G.: *See—*
Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., 4,213,189, Cl. 364-100.000.
Pufpaff, Frederick J.; and Hoen, Cuyler, to Simmons Fastener Corporation. Quarter turn industrial fastener. 4,212,560, Cl. 403-353.000.
Puletti, Paul P.: *See—*
Taylor, Thomas R.; and Puletti, Paul P., 4,212,910, Cl. 428-35.000.
Pumpex Production AB: *See—*
Jonsson, Arne F., 4,212,590, Cl. 417-24.000.
Pye (Electronics Products) Limited: *See—*
Chesher, Keith, 4,212,360, Cl. 177-139.000.
Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, to Compagnie Generale de Radiologie. Method and circuit arrangement for improving the radiological definition of the focal spots of X-ray tubes. 4,213,048, Cl. 250-402.000.
Quick, Leonard M.: *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,212,729, Cl. 208-210.000.
Quick, Thomas E. Pollution emission control and fuel saving device for internal combustion engines. 4,212,274, Cl. 123-548.000.
Quinlan, Patrick M., to Petrolite Corporation. Quaternary polyvinyl heterocyclic compositions and use as corrosion inhibitors. 4,212,764, Cl. 252-392.000.
Qureshi, Azam S., to Tomco, Inc. Power assist proportional remote controller. 4,212,323, Cl. 137-625.610.
Racal-Milgo, Inc.: *See—*
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., 4,213,097, Cl. 330-51.000.
Raczkowski, Jan; and Speelman, Irving A., to Propper Manufacturing Co., Inc. Wound clip rack. 4,212,390, Cl. 206-339.000.
Radda, George J.: *See—*
Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., 4,213,052, Cl. 250-462.000.
Raineri, Giuseppe, to Pietro Laverda S.P.A. Machine for cutting and conditioning forage. 4,212,144, Cl. 56-15.800.
Raitto, Russell G., to Concord Laboratories, Inc. Blood sampling syringe. 4,212,307, Cl. 128-763.000.
Ramel, Francois: *See—*
Rousseau, Alain; and Ramel, Francois, 4,212,200, Cl. 73-861.470.
Ramer, Daniel J. Phase inversion test device. 4,213,085, Cl. 324-57.00R.
Randolph, Robert W., to ACF Industries, Incorporated. Quick fill-/empty tank car system. 4,212,333, Cl. 141-98.000.
Randvere, Fredrik V.; and Konzelman, Leroy M., to American Cyanamid Company. Process for preparing methylene blue. 4,212,971, Cl. 544-37.000.
Rank Organisation Limited, The: *See—*
Stelling, David; Barker, David H.; and Weston, Terence E., 4,212,845, Cl. 422-82.000.
Rao, Chatty; and Schmitz, Bruno, to Klockner-Humboldt-Deutz AG. Method and apparatus for the production of mold bodies. 4,212,608, Cl. 425-85.000.
Rao, G. R. Mohan, to Texas Instruments Incorporated. Double level polysilicon series transistor cell. 4,213,139, Cl. 357-41.000.
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, to Akzona Incorporated. Matting article with process and apparatus for its production. 4,212,692, Cl. 156-167.000.
Rasmussen, Howard J.; and Subluskey, William C., to Stewart-Warner Corporation. Hub drive for bicycle speedometer. 4,212,482, Cl. 280-289.00D.
Ratcliffe, Ronald W., to Merck & Co., Inc. Process for deacylating N-acyl-6-substituted-2-[2-aminoethylthio]-1-carbadethiapen-2-em-3-carboxylic acids. 4,212,807, Cl. 260-326.310.
Rauchfuss, Charles G., Jr.; Herman, Ralph; and Barton, Harvey R., Jr., to RCA Corporation. Web position controller for web transport systems. 4,212,422, Cl. 226-196.000.
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, to Bayer Aktiengesellschaft. Process for the preparation of 5-(oxiranylmethyl)-1,3-benzodioxole. 4,212,809, Cl. 260-340.50R.
Rax-Unlimited: *See—*
Kelly, Edmund R.; and Orona, Thomas V., Sr., 4,212,402, Cl. 211-105.300.
Raytheon Company: *See—*
Mims, James R., 4,212,423, Cl. 228-136.000.
Pridham, Roger G., 4,213,195, Cl. 367-92.000.
Wood, Wilhelm A. H., 4,213,094, Cl. 370-12.000.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,213,068, Cl. 307-255.000.
Clemens, Jon K., 4,213,148, Cl. 358-128.600.
Daniel, James W., Jr., 4,213,096, Cl. 455-260.000.
Harford, Jack R., 4,213,151, Cl. 358-178.000.
Nossen, Edward J., 4,213,088, Cl. 324-98.000.
Rauchfuss, Charles G., Jr.; Herman, Ralph; and Barton, Harvey R., Jr., 4,212,422, Cl. 226-196.000.

Stakun, Vitie J.; and White, William H., 4,212,540, Cl. 356-354.000.
Reardon, Daniel R., to Lynes, Inc. Tubing manipulated test valve and latch assembly. 4,212,355, Cl. 166-336.000.
Redmore, Derek; and Welge, Frederick T., to Petrolite Corporation. Inhibiting scale with amino-phosphonic-sulfonic acids. 4,212,734, Cl. 210-58.000.
Reed, James S.; and Moore, Roger H., to Alfred University Research Foundation. Novel whiteware bodies and energy efficient process for their production. 4,212,924, Cl. 428-428.000.
Reedy, Lonnie T.; and Smith, Eddie, to Reedy and Smith, Inc. Automatic transmissions. 4,212,571, Cl. 408-82.000.
Reedy and Smith, Inc.: *See*—
Reedy, Lonnie T.; and Smith, Eddie, 4,212,571, Cl. 408-82.000.
Refreshment Machinery Incorporated: *See*—
Neely, Raymond J., 4,212,415, Cl. 222-231.000.
Reich, Heinrich: *See*—
Eibofner, Eugen; and Reich, Heinrich, 4,212,641, Cl. 433-133.000.
Loge, Hans; Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, 4,212,640, Cl. 433-82.000.
Reid, Douglas C. J.; and Waterworth, Peter, to Plessey Handel und Investments AG. Holographic data storage systems. 4,213,193, Cl. 365-125.000.
Reim, Paul. Framing means for framing a picture or other object. 4,212,122, Cl. 40-152.100.
Reinert, Charles P., to Solarein, Inc. Solar collector. 4,212,292, Cl. 126-449.000.
Reis, James J.: *See*—
Robinson, Guner S.; and Reis, James J., 4,213,150, Cl. 358-166.000.
Reisinger, Konrad: *See*—
Hoelzl, Ludwig; and Reisinger, Konrad, 4,213,011, Cl. 370-100.000.
Reist, Parker C.: *See*—
Coover, Stephen R.; and Reist, Parker C., 4,212,190, Cl. 73-28.000.
Reliance Telecommunication Electronics Company: *See*—
Kimbrough, Mahlon D., 4,213,015, Cl. 179-175.20C.
Renault Industries Equipments et Techniques-Riet: *See*—
Vu-Do, Que, 4,212,572, Cl. 409-37.000.
Renth, Ernst-Otto: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.
Repinski, Robert J.; and Pratt, Enoch B. Humane bleeder arrow. 4,212,463, Cl. 273-418.000.
Research-Cottrell, Inc.: *See*—
Wagner, David A., 4,212,383, Cl. 198-616.000.
Research Triangle Institute: *See*—
Coover, Stephen R.; and Reist, Parker C., 4,212,190, Cl. 73-28.000.
Reticon Corporation: *See*—
West, Perry C.; and Buss, Robert R., 4,212,205, Cl. 73-579.000.
Retroflame International Limited: *See*—
Robinson, Garnet, 4,212,675, Cl. 106-18.150.
Reynolds, Charles E.: *See*—
Malucci, Robert D.; and Reynolds, Charles E., 4,212,511, Cl. 339-276.00T.
Rhone-Poulenc Industries: *See*—
Choulet, Jean-Claude; and Laily, Andre, 4,212,991, Cl. 562-480.000.
Goletto, Jean, 4,212,777, Cl. 260-18.00N.
Rhythm Watch Co. Ltd.: *See*—
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, 4,212,154, Cl. 368-248.000.
Ribi, Valentino, to Diafil International S.A. Suspension system for vehicle wheels. 4,212,481, Cl. 280-276.000.
Richtzenhain, Hermann: *See*—
Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, 4,212,996, Cl. 568-639.000.
Rickert, William, to Donovan Wire & Iron Company. Parking brake lever assembly. 4,212,211, Cl. 74-538.000.
Ricketts, Guy A. G.: *See*—
Leon, Nicholas H.; and Ricketts, Guy A. G., 4,212,645, Cl. 8-406.000.
Rickey, Burton C.: *See*—
Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., 4,212,441, Cl. 244-46.000.
Ricoh Company, Ltd.: *See*—
Shimomura, Shozo, 4,212,531, Cl. 355-55.000.
Rieger, Franz: *See*—
Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, 4,212,720, Cl. 204-195.00S.
Riggs, Merle E.: *See*—
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Rigterink, Dale L. Radial torque internal combustion engine. 4,212,271, Cl. 123-43.00B.
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Takeuchi, Setsuo; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, 4,212,664, Cl. 71-94.000.
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Moore, George G.I., 4,212,882, Cl. 424-275.000.
Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., 4,212,865, Cl. 424-250.000.
Ritchie, Leon T.; and Peppler, Michael S., to AMP Incorporated. Filtered header. 4,212,510, Cl. 339-147.00R.
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Werner, Wolfgang; and Rittersdorf, Walter, 4,212,844, Cl. 422-56.000.
Robbins, Daniel H., to Itek Corporation. Cartridge having a skewed side wall for containing photosensitive material. 4,212,389, Cl. 206-316.000.
Robbins, Wayne E.: *See*—
Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, 4,213,190, Cl. 364-900.000.
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Bauer, Werner R., 4,212,324, Cl. 137-625.660.
Robert, Andre' , to Upjohn Company, The. Prevention of prostaglandin-induced enteropooling with PGI's and PGD's. 4,212,884, Cl. 424-285.000.
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Dreher, Ernst; Wolf, Richard; and Burklin, Max, 4,212,370, Cl. 181-230.000.
Fresow, Jurgen; and Wurst, Bert, 4,212,280, Cl. 123-611.000.
Holzbaur, Siegfried, 4,212,834, Cl. 261-44.00A.
Hornung, Friedrich; and Gerschner, Martin, 4,213,077, Cl. 318-245.000.
Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, 4,212,720, Cl. 204-195.00S.
Zirps, Wilhelm, 4,212,165, Cl. 60-486.000.
Roberts, Richard Dean: *See*—
Shumate, Billy R., 4,212,129, Cl. 43-113.000.
Robertson, Victor J.: *See*—
Allen, Robert H.; and Robertson, Victor J., 4,212,396, Cl. 206-629.000.
Robertson, Wilbert J.: *See*—
Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., 4,212,849, Cl. 423-10.000.
Robin, Martin I. Positioning device. 4,212,123, Cl. 40-152.100.
Robinson, Garnet, to Retroflame International Limited. Fireproofing. 4,212,675, Cl. 106-18.150.
Robinson, Guner S.; and Reis, James J., to Northrop Corporation. Real-time edge processing unit. 4,213,150, Cl. 358-166.000.
Robinson, Thomas S.: *See*—
Diez, Mark F.; Lewis, David O.; and Robinson, Thomas S., 4,213,178, Cl. 364-200.000.
Roche, Dwain F.; and Banks, Stanley E., to Energy Development Corporation. Traffic-operated air-powered generating system. 4,212,598, Cl. 417-229.000.
Rock, Alan, to Chloride Group Limited. Automatic electric battery charging apparatus. 4,213,080, Cl. 320-21.00U.
Rockwell International Corporation: *See*—
Bippus, Jacob R., 4,212,214, Cl. 83-102.100.
Boyd, Edward S., 4,212,346, Cl. 165-32.000.
Roesch, Androniki: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.
Roeschlau, Peter: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.
Rogers, Richard B.: *See*—
Carson, Chrislyn M.; Ehr, Robert J.; and Rogers, Richard B., 4,212,869, Cl. 424-263.000.
Rogers, Wesley A., to General Motors Corporation. Solid state switch. 4,213,066, Cl. 307-252.00C.
Rohm and Haas: *See*—
Avery, Noyes L.; and Work, William J., 4,212,791, Cl. 260-40.00R.
Rohrbacher, Peter J.: *See*—
Potosky, Milton J.; and Rohrbacher, Peter J., 4,212,691, Cl. 156-79.000.
Rolls-Royce Limited: *See*—
Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., 4,212,259, Cl. 115-73.000.
Roman, Alfred R., to Burlington Industries, Inc. Yarn blending with air attachment on coning machine. 4,212,152, Cl. 57-207.000.
Roper Corporation: *See*—
Letner, Eugene; and Gobin, Donald L., 4,212,363, Cl. 180-19.00H.
Rosberg, Frantisek: *See*—
Mirsch, Miroslav; Rosberg, Frantisek; and Ruzicka, Miroslav, 4,212,135, Cl. 51-165.710.
Rosen, Perry: *See*—
Holland, George W.; and Rosen, Perry, 4,212,993, Cl. 562-503.000.
Rosenstock, Guenter, to Siemens Aktiengesellschaft. Ink absorbent pressure rollers for ink recording devices. 4,212,555, Cl. 400-639.100.
Ross, Alexander D., Jr. High utility disk toy. 4,212,131, Cl. 46-74.00D.
Rothrock, Elmer W.: *See*—
Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., 4,212,168, Cl. 60-661.000.
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., to United States of America, Air Force. Intrusion detection system. 4,213,122, Cl. 340-552.000.
Rousseau, Alain; and Ramel, Francois, to Transformateurs BC and EFFA. Instantaneous flow meter for automobile vehicles. 4,212,200, Cl. 73-861.470.
Royle, Norman E.: *See*—
Birrell, Raymond N.; and Royle, Norman E., 4,212,788, Cl. 260-33.6UA.
Rudge, George T.: *See*—
Dougherty, John J.; and Rudge, George T., 4,212,287, Cl. 126-419.000.

Rudolph, Hans: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Rue, Charles V., to Norton Company. Segmental grinding wheel and composite abrading segments therefor. 4,212,137, Cl. 51-206.400.
Ruenzi, Kurt. Apparatus for automatically feeding individual sheets from a stack through an office machine. 4,212,456, Cl. 271-4.000.
Ruff, David L.; and Nath, N. Gokul, to Grefco, Inc. Settle resistant loose-fill perlite insulation comprising particles rendered slightly tacky by a coating thereon. 4,212,755, Cl. 252-62.000.
Rummel, Edward W.: *See*—
Herron, William L.; and Rummel, Edward W., 4,212,257, Cl. 112-278.000.
Runyon, Clinton A. Mouthpiece for woodwind musical instruments. 4,212,223, Cl. 84-383.00R.
Ruppe, Emil P.: *See*—
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Rusakova, Valentina A.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Rusbach, Maurice, to Sarmac S.A. Bottom fuse. 4,212,245, Cl. 102-249.000.
Ruseff, Walter Z., to Caterpillar Tractor Co. Pressurized fluid supply system. 4,212,596, Cl. 417-216.000.
Russel, William J.; and Garnis, Elizabeth A., to United States of America, Army. Process and composition of low toxicity for preparing aluminum surfaces for adhesive bonding. 4,212,701, Cl. 156-665.900.
Russo, David A.: *See*—
Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., 4,212,810, Cl. 260-340.50R.
Ruti-Te Strake B.V., a Dutch Company: *See*—
van Donk, Cornelis; and van Mullekom, Hubert P., 4,212,330, Cl. 139-435.000.
Ruzicka, Miroslav: *See*—
Mirsch, Miroslav; Rosberg, Frantisek; and Ruzicka, Miroslav, 4,212,135, Cl. 51-165.710.
Rybkin, Vladimir F.: *See*—
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.
Saari, Stanley T. Snowmobile clutch adjusting tool. 4,212,111, Cl. 33-181.00R.
Sachleben, Harold G., Sr., to Allied Chemical Corporation. Quench stack reel assembly and clamping device. 4,212,606, Cl. 425-72.00S.
Safarov, Georgy S.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.
Safina, Fialka G.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
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Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, 4,212,984, Cl. 560-18.000.
St. Amand, Elmer F. Pipette and method of making same. 4,212,204, Cl. 73-425.600.
Saito, Ichiyoshi: *See*—
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,212,837, Cl. 264-15.000.
Saito, Kouji: *See*—
Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, 4,212,702, Cl. 162-36.000.
Saito, Koukichi; and Suzuki, Nobuo, to Dainippon Ink and Chemicals, Inc. Fishing rod and process for its production. 4,212,693, Cl. 156-173.000.
Saito, Tatsuoki; and Nagashima, Eiji, to Tokico Ltd. Automatic resilient ring fitting device. 4,212,096, Cl. 29-235.000.
Saitoh, Shiroh: *See*—
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, 4,212,783, Cl. 260-29.60H.
Sakagami, Teruo: *See*—
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.
Sakata, Isao: *See*—
Nomura, Takao; Terasaka, Kunihiko; and Sakata, Isao, 4,212,954, Cl. 521-159.000.
Sakura Color Products Corporation: *See*—
Murakami, Kimio, 4,212,786, Cl. 260-31.20R.
Ueda, Ken, 4,212,676, Cl. 106-19.000.
Sakurada, Ichiro; Okada, Toshio; and Kaji, Kanako, to Japan Atomic Energy Research Institute. Method for manufacturing heat-resistant and flame-retardant synthetic fiber. 4,212,649, Cl. 8-115.500.
Salamon, Klaus, to Varta Batterie Aktiengesellschaft. Pole seal for storage batteries. 4,212,934, Cl. 429-181.000.
Sand, William T., to Eltra Corporation. Method and apparatus for aligning a bearing. 4,212,098, Cl. 29-460.000.
Sanders Associates, Inc.: *See*—
Chapman, Paul W., 4,212,268, Cl. 119-2.000.
Sanders, Corey L.; and Makow, David M., to Canadian Patents & Development Ltd. Ultraviolet radiation dosimeter. 4,212,535, Cl. 356-51.000.
Sandoz, Inc.: *See*—
Coppola, Gary M., 4,212,804, Cl. 260-325.00R.
Houlihan, William J., 4,212,876, Cl. 424-273.00B.
Sandoz Ltd.: *See*—
Vogel, Claude; and Wicki, Heinz, 4,212,802, Cl. 260-145.00A.
Sandvik Aktiebolag: *See*—
Andersson, Allan; and Bergstrom, Bert, 4,212,569, Cl. 408-59.000.
Ettmayer, Peter; and Kieffer, Richard, 4,212,671, Cl. 75-238.000.
Persson, Anders E., 4,212,559, Cl. 403-348.000.
Wermeister, Gunter, 4,212,567, Cl. 407-46.000.
Sankyo Company Limited: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Sano, Seiichi: *See*—
Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,212,854, Cl. 423-247.000.
Santa Fe International Corporation: *See*—
Lambert, R. Bruce, 4,212,450, Cl. 254-108.000.
Sapper, Ekkehard: *See*—
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.
Sarmac S.A.: *See*—
Rusbach, Maurice, 4,212,245, Cl. 102-249.000.
Sasaki, Kazuya; Mitsui, Hiromi; and Onodera, Kazukiyo, to Kaken Chemical Company, Limited. Streptovaricin C derivatives. 4,212,881, Cl. 424-275.000.
Sassmannshausen, Knut O. Lighting fixture with side escape window. 4,213,171, Cl. 362-310.000.
Sasson, Zabar: *See*—
Schonberger, Eva; Sasson, Zabar; and Michael, Uri, 4,212,814, Cl. 260-347.800.
Satarin, Vladimir I.: *See*—
Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, to Nippon Oil Company, Ltd. Paper sizes. 4,212,783, Cl. 260-29.60H.
Sato, Kazunobu: *See*—
Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, 4,212,141, Cl. 56-11.800.
Sato, Makoto: *See*—
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, 4,212,501, Cl. 303-116.000.
Satoh, Heijiro: *See*—
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,945, Cl. 435-212.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,946, Cl. 435-212.000.
Satoh, Kenji; Tachikawa, Hajime; and Watanabe, Mitsuru, to Hitachi Heating Appliances Co., Ltd. High frequency energy apparatus with automatic heating cycle control. 4,213,023, Cl. 219-10.55B.
Satoi, Shuzo: *See*—
Otani, Masaru; Satoi, Shuzo; and Takada, Masaki, 4,212,858, Cl. 424-118.000.
Satou, Isao: *See*—
Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, 4,212,624, Cl. 425-548.000.
Satou, Osahiro; Yamaguchi, Makoto; and Hasegawa, Mikio, to Ajinomoto Company, Incorporated. Process of producing soybean and/or soy protein products. 4,212,798, Cl. 260-123.500.
Saurenman, Donald G.: *See*—
Cumming, James M.; and Saurenman, Donald G., 4,213,167, Cl. 361-213.000.
Sawamura, Ichiro, to Olympus Optical Co., Ltd. Scanner with multiple optical fibres. 4,212,516, Cl. 350-96.240.
Scattolin, Antonio; and Bernardi, Sergio. Movable stand, particularly for lampholders and lamp carrier thereon. 4,213,172, Cl. 362-413.000.
Schaar, Charles H., to Kendall Company, The. Bandage with protective member. 4,212,296, Cl. 128-156.000.
Schadenberg, Hendrik; Leenaars, Corrie M. J.; and de Jong, Aaldert J., to Shell Oil Company. Dithiophosphoric acids and salts thereof and oil compositions containing the salts. 4,212,751, Cl. 252-32.70E.
Schaefer, Henry A.: *See*—
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,213,078, Cl. 320-2.000.

Schafer, Fritz P., to Max-planck-Gesellschaft zur Fordenberg der Wissenschaften e.V. Process for the optical display of information using lasers. 4,213,153, Cl. 358-231.000.
Schaffner, Alfred, to Polydent SA. Measuring apparatus for setting the correct penetration depth of root canal instruments. 4,212,639, Cl. 433-72.000.
Schaniel, Carl L., Jr.: *See*—
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., 4,213,198, Cl. 367-113.000.
Schaper, Ulf-Armin; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Perfumery compositions with trimethyl-tetrahydropyran-2-ones. 4,212,773, Cl. 252-522.00R.
Schara, Robert E.: *See*—
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.
Schasser, Donald S., to Automatic Parking Devices, Inc. Dynamic card reader. 4,213,039, Cl. 235-449.000.
Schatteman, Etienne A. M., to Star S.A. Fast rewind mechanism for bidirectional tape transports for cassettes. 4,212,438, Cl. 242-201.000.
Schauffelle, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., to Anaconda Company, The. Manufacture of compacted strand. 4,212,151, Cl. 57-9.000.
Schaumann, Wolfgang: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.
Schellberg, Franz: *See*—
Gelsdorf, Gunter; Leupold, Hermann; and Schellberg, Franz, 4,212,926, Cl. 428-472.000.
Schene, Horst: *See*—
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, 4,212,545, Cl. 366-152.000.
Schenesse, Klemens: *See*—
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, 4,212,692, Cl. 156-167.000.
Schering Aktiengesellschaft: *See*—
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,212,940, Cl. 435-55.000.
Schering Corporation: *See*—
Daniels, Peter J. L.; McCombie, Stuart; and Nagabhushan, Tattanahalli L., 4,212,859, Cl. 424-180.000.
McCombie, Stuart, 4,212,860, Cl. 424-180.000.
Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., to Riker Laboratories, Inc. Amine derivatives of 2-nitro-3-phenylbenzofuran. 4,212,865, Cl. 424-250.000.
Schillinger, Joseph F., to Champion International Corporation. Glassware carrier. 4,212,391, Cl. 206-434.000.
Schlenker, Reinhard: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.
Schlick, Horst, to VDO Adolf Schindling AG. Electrically heated windshield washer spray nozzle assembly. 4,212,425, Cl. 239-133.000.
Schliebs, Reinhard: *See*—
Mitschke, Karl-Heinz; and Schliebs, Reinhard, 4,212,832, Cl. 260-930.000.
Schloemann-Siemag Aktiengesellschaft: *See*—
Bretschneider, Erich, 4,212,178, Cl. 72-97.000.
Steyvers, Weinfried; and Zilges, Franz-Josef, 4,212,182, Cl. 72-253.00A.
Schmalzriedt, Truman T.: *See*—
Wisner, Daniel A.; and Schmalzriedt, Truman T., 4,213,082, Cl. 323-17.000.
Schmid, Herbert; Schneider, Helmut; and Watson, Allan, to Linde Aktiengesellschaft. Control of highly exothermic chemical reactions. 4,212,817, Cl. 260-449.00M.
Schmidt, Adolf: *See*—
Benninger, Siegfried; and Schmidt, Adolf, 4,212,715, Cl. 204-99.000.
Schmidt, Charles C., to Bendix Corporation, The. Distributed compensation for capacitance-type fluid measuring apparatus. 4,212,202, Cl. 73-304.00C.
Schmidt, George A. Aluminum panel container or trailer body. 4,212,405, Cl. 220-1.500.
Schmidt, Robert W., to Texas Instruments Incorporated. Eight bit standard connector bus for sixteen bit microcomputer using mirrored memory boards. 4,213,177, Cl. 364-200.000.
Schmidt, Roy W.: *See*—
Wilson, David A.; and Schmidt, Roy W., 4,212,994, Cl. 562-568.000.
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, to Kernforschungszentrum Karlsruhe GmbH. Counterflow extraction column. 4,212,723, Cl. 204-272.000.
Schmitt, Felix: *See*—
Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, 4,212,962, Cl. 528-45.000.
Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, to Veba-Chemie Atkiengesellschaft. Epsilon-caprolactam blocked polyisocyanates. 4,212,962, Cl. 528-45.000.
Schmitz, Bruno: *See*—
Rao, Chatty; and Schmitz, Bruno, 4,212,608, Cl. 425-85.000.
Schmitz, Paul: *See*—
Kerner, Walter; and Schmitz, Paul, 4,212,855, Cl. 423-522.000.
Schmolzer, Gerhard; and Verdino, Heiner, to Vianova Kunstharz, A.G. Cathodically depositable binders. 4,212,779, Cl. 260-22.0CQ.
Schneider, Dieter: *See*—
Patsch, Manfred; Schneider, Dieter; Gotsmann, Guenther; and Hettche, Albert, 4,212,709, Cl. 204-49.000.
Schneider, Helmut: *See*—
Schmid, Herbert; Schneider, Helmut; and Watson, Allan, 4,212,817, Cl. 260-449.00M.
Schneider, Joachim: *See*—
Paust, Joachim; Schneider, Joachim; and Jaedicke, Hagen, 4,212,827, Cl. 568-347.000.
Schnell, Georg; Hammon, Fritz; and Ohlinger, Manfred, to BASF Aktiengesellschaft. Improving the magnetic properties of gamma-iron (III) oxide. 4,212,903, Cl. 427-127.000.
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, to BASF Aktiengesellschaft. Tape transport apparatus having a central capstan. 4,212,436, Cl. 242-192.000.
Scholer, Fred R.: *See*—
Brubaker, Gaylen R.; and Scholer, Fred R., 4,212,757, Cl. 252-95.000.
Scholz, Oscar P. Method and apparatus for resizing torque converter impeller drive shafts. 4,212,187, Cl. 72-393.000.
Schonberger, Eva; Sasson, Zabar; and Michael, Uri, to Abic, Ltd. Bis-2-furanidyl ether and method of preparation. 4,212,814, Cl. 260-347.800.
Schonfeld, Erwin: *See*—
Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.
Schrage, Klaus: *See*—
Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, 4,212,996, Cl. 568-639.000.
Schrijvers, Joost E.; and Boers, Martinus W. A., to U.S. Philips Corporation. Image intensifier tube. 4,213,055, Cl. 250-483.000.
Schroeder, Hartmut R.: *See*—
Buckler, Robert T.; and Schroeder, Hartmut R., 4,212,805, Cl. 260-326.00N.
Schromm, Kurt: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.
Schultz, Peter: *See*—
Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, 4,212,746, Cl. 210-495.000.
Schulz, Alfred: *See*—
Grodde, Karl-Heinz; and Schulz, Alfred, 4,212,794, Cl. 260-97.600.
Schulz, Lawrence E., to Nalco Chemical Co. Thixotropic refractory binder based upon aluminum phosphate gelled silica sols. 4,212,680, Cl. 106-65.000.
Schuman-Hoole, April. Razor. 4,212,103, Cl. 30-32.000.
Schussler, Rainer: *See*—
Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, 4,212,720, Cl. 204-195.00S.
Schutten, Herman P.: *See*—
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,213,067, Cl. 307-252.00C.
Schwarzmann, Matthias: *See*—
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.
Schweizer, Eduard H. Device for storing objects, in particular card-like objects. 4,212,401, Cl. 211-81.000.
Schwind, Juergen: *See*—
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.
SCM Corporation: *See*—
Evans, James M.; and Ting, Vincent W., 4,212,781, Cl. 260-29.4UA.
Scott, Leroy A. Spare tire carrier for pick-up trucks. 4,212,417, Cl. 224-42.210.
Scott, Robert F. Retrieval and storage device for flexible elements. 4,212,421, Cl. 226-127.000.
Scragg, Edgar P. Dosing a flowing fluid. 4,212,373, Cl. 184-56.00A.
Scull, Jon V.: *See*—
Lamontagne, Robert E.; and Scull, Jon V., 4,212,591, Cl. 417-38.000.
Seagraves, Robert L., to Du Pont de Nemours, E. I., and Company. Hydrogenation catalyst with improved metallic distribution, its preparation and use for the reduction of aromatic nitro compounds. 4,212,824, Cl. 260-580.000.
Seamans, Winthrop W. Fireproofing composition comprising sodium silicate, gum arabic or other gum, and a water dispersible polymer selected from the class of epoxy polymers, natural latices and synthetic latices. 4,212,920, Cl. 428-413.000.
Sears, Roebuck & Co.: *See*—
Gall, John C., 4,212,495, Cl. 297-84.000.
Security Plastics, Inc.: *See*—
Kutik, Louis F.; and Cecil, Howard E., 4,212,332, Cl. 141-98.000.
Sederholm, Emma Lou: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., 4,213,040, Cl. 235-476.000.
Sedy, Josef, to Crane Packing Co. Self aligning spiral groove face seal. 4,212,475, Cl. 277-96.100.
Seifert, Gerd, to Siemens Aktiengesellschaft. X-Ray diagnostic generator comprising an inverter feeding the high voltage transformer. 4,213,049, Cl. 250-408.000.
Seifert, Hermann: *See*—
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, 4,212,809, Cl 260-340.50R.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,212,522, Cl. 354-25.000.
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,212,155, Cl. 368-250.000.
Sekiguchi, Fumio, to Sony Corporation. Magnetic tape recording and/or reproducing apparatus. 4,212,439, Cl. 242-206.000.
Sekiyama, Kenichi: *See*—
Nagasaka, Yasumasa; Sekiyama, Kenichi; and Masuyama, Yasushi, 4,212,629, Cl. 432-10.000.
Semasa, Takayoshi: *See*—
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.
Seng, Stephen, to Owens-Corning Fiberglas Corporation. Apparatus for handling heat-softenable batch material. 4,212,613, Cl. 425-141.000.
Serboli, Giancarlo: *See*—
D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, 4,212,703, Cl. 162-129.000.
Serlin, Richard A. Surface alloying method and apparatus using high energy beam. 4,212,900, Cl. 427-53.100.
Service Fracturing Company and Airry, Inc.: *See*—
Guinn, Jerry H., 4,212,354, Cl. 166-303.000.
Sessoms, J. C., Jr.: *See*—
Mitchell, John D.; and Sessoms, J. C., Jr., 4,212,634, Cl. 432-186.000.
Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., to Eastman Kodak Company. Film unit assembly. 4,212,673, Cl. 430-496.000.
Seyler, Jay K.: *See*—
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,212,795, Cl. 260-112.50T.
Shaffer, Robert H. Blower unit for wall heater having slotted front panel. 4,212,233, Cl. 98-108.000.
Shamardin, Valentin K.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Shane, Robert K.; and White, Glenn E. Sheet metal fireplace type stove. 4,212,286, Cl. 126-77.000.
Sharp Kabushiki Kaisha: *See*—
Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, 4,213,074, Cl. 313-509.000.
Washizuka, Isamu; and Kakutani, Nobuyasu, 4,213,035, Cl. 235-92.0DN.
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J. Cleansing agents containing oleic acid, isopropanol and ethylacetate. 4,212,758, Cl. 252-119.000.
Shaw, Jane M.: *See*—
Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., 4,212,935, Cl. 430-326.000.
Shay, Robert J. E.: *See*—
Andros, Frank E.; and Shay, Robert J. E., 4,212,349, Cl. 165-105.000.
Sheer, Russell E., Jr., to General Electric Company. Liquid feeding and mixing arrangement including an ejector thermal sleeve. 4,212,594, Cl. 417-54.000.
Shell Oil Company: *See*—
Clark, Michael T.; and ten Haken, Pieter, 4,212,868, Cl. 424-263.000.
Conradi, Joseph J., 4,212,207, Cl. 73-623.000.
Hirsch, John M.; and Stapleton, Robert G., 4,212,201, Cl. 73-290.00V.
Schadenberg, Hendrik; Leenaars, Corrie M. J.; and de Jong, Aaldert J., 4,212,751, Cl. 252-32.70E.
Titus, Paul E., 4,212,312, Cl. 137-13.000.
Shemyakina, Elena V.: *See*—
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.
Shen, Mitchel M.: *See*—
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,212,719, Cl. 204-165.000.
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., to Merck & Co., Inc. 3,4α-Di-O-derivatives of mercaptomethylpyridine and pyridylmethyldisulfide. 4,212,976, Cl. 546-115.000.
Shepherd, Lawrence H., Jr., to Ethyl Corporation. 2,2-Dialkyltetrahydropyrans. 4,212,812, Cl. 260-345.100.
Shepherd, Michael W. Lay-in yarn feed. 4,212,174, Cl. 66-9.00R.
Sheratte, Martin B.; and Simanyi, Lydia H., to McDonnell Douglas Corporation. Fire-retardant polyurethane foams. 4,212,953, Cl. 521-137.000.
Sheremet, Ljudmila S.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.
Shiba, Haruo; and Okamura, Masatoshi, to TDK Electronics Company Limited. Tape cassette. 4,212,437, Cl. 242-199.000.
Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Shibata, Akira: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.
Shiga, Tetsuo: *See*—
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.
Shimada, Hiroaki, to Kotobuki Sangyo Kabushiki Kaisha. Mechanism for automatically centering sub-guide rollers and for adjusting clamping condition of sub-guide rollers, for use in material guiding apparatus of rolling mill. 4,212,181, Cl. 72-250.000.
Shimizu Construction Co., Ltd., The: *See*—
Watabe, Keiichi, 4,212,565, Cl. 405-269.000.
Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Process for the isolation of polyarylene esters. 4,212,951, Cl. 528-495.000.
Shimizu, Shizuo: *See*—
Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, 4,212,787, Cl. 260-33.6AQ.
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, to Kawasaki Steel Corporation. Method for producing grain-oriented electrical steel sheets or strips having a very high magnetic induction. 4,212,689, Cl. 148-111.000.
Shimomura, Shozo, to Ricoh Company, Ltd. Aperture-controlling device in a variable-scale photocopying machine. 4,212,531, Cl. 355-55.000.
Shin-Etsu Handotai Co., Ltd.: *See*—
Iida, Yoshiya; and Ohga, Shoichiro, 4,213,086, Cl. 324-62.000.
Shinozaki, Nobuo: *See*—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,212,155, Cl. 368-250.000.
Shionogi & Co., Ltd.: *See*—
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.
Shiraki, Shigemi, to Mitsui Petrochemical Industries Ltd. Process for treatment by liquid cyclone for production of terephthalic acid suspension having reduced impurity content. 4,212,995, Cl. 562-485.000.
Shiratori, Minoru: *See*—
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, 4,212,154, Cl. 368-248.000.
Shiratori, Yukio. Golf club. 4,212,467, Cl. 273-163.00A.
Shkolnikov, Vicktor M.: *See*—
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.
Shoemaker, Andrew R.: *See*—
Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., 4,212,441, Cl. 244-46.000.
Shoup, Stephen G., to Caterpillar Tractor Co. Heavy duty drawbar. 4,212,139, Cl. 52-721.000.
Shue, Robert S., to Phillips Petroleum Company. Mold corrosion inhibition. 4,212,793, Cl. 260-45.85T.
Shum, Edward K.; Martija, Henry M.; and Head, Leon E., to Bell & Howell Company. Methods and apparatus for driving information carrier tape. 4,213,160, Cl. 360-73.000.
Shumate, Billy R., to Roberts, Richard Dean; and Brewer, Robert L., part interest to each. Insect trap. 4,212,129, Cl. 43-113.000.
Shutt, George V. High speed injector for molding machines. 4,212,625, Cl. 425-549.000.
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P. Titanium oxycarbonitride based hard alloy. 4,212,670, Cl. 75-233.000.
Siebens, Larry N.: *See*—
Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., 4,212,387, Cl. 206-223.000.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Sulfonic acid-N'-methylamido-N'-sulfenyl-N-methyl-carbamic acid esters. 4,212,883, Cl. 424-277.000.
Siemens Aktiengesellschaft: *See*—
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.
Bodlaj, Viktor, 4,212,534, Cl. 356-1.000.
Freygang, Hanz-Joachim, 4,213,083, Cl. 323-44.00R.
Gerges, Andre, 4,213,006, Cl. 375-97.000.
Hoelzl, Ludwig; and Reisinger, Konrad, 4,213,011, Cl. 370-100.000.
Knauer, Karl; and Pfleiderer, Hans J., 4,213,105, Cl. 333-165.000.
Link, Klaus; and Lochter, Werner, 4,213,173, Cl. 363-163.000.
Magori, Valentin, 4,213,197, Cl. 367-94.000.
Rosenstock, Guenter, 4,212,555, Cl. 400-639.100.
Seifert, Gerd, 4,213,049, Cl. 250-408.000.
Veith, Werner; and Stein, Christian, 4,213,072, Cl. 313-217.000.
von Buenau, Heinrich, 4,213,147, Cl. 358-112.000.
Silverman, Daniel; and Johnson, Everett A. Access security system. 4,213,038, Cl. 235-382.000.
Simanyi, Lydia H.: *See*—
Sheratte, Martin B.; and Simanyi, Lydia H., 4,212,953, Cl. 521-137.000.
Simeonov, Yordan T.; and Djabarov, Nikola B., to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban. Method of accel-

erating the hardening and increasing the strength of Portland cement. 4,212,681, Cl. 106-89.000.

Simmons Fastener Corporation: *See*—
Pufpaff, Frederick J.; and Hoen, Cuyler, 4,212,560, Cl. 403-353.000.

Simmons, James R.; and Weller, Frank C., to Interlake, Inc. Rotary dog assembly. 4,212,238, Cl. 100-32.000.

Singer Company, The: *See*—
Herron, William L.; and Rummel, Edward W., 4,212,257, Cl. 112-278.000.
Wolf, Paulus W., 4,212,255, Cl. 112-217.100.

Singh, Gurnam: *See*—
Newbold, William F.; and Singh, Gurnam, 4,212,209, Cl. 73-721.000.

Sirtori, Vittorio: *See*—
Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., 4,212,932, Cl. 429-111.000.

Skowronski, Michael J.; and DeLeon, Alberto, to Celotex Corporation, The. Polyisocyanurate foam laminate. 4,212,917, Cl. 428-310.000.

Slattery, Gerard: *See*—
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V. Gold-plating electrolyte. 4,212,708, Cl. 204-46.00G.

Smith, Alan T.: *See*—
Allen, Donald C.; and Smith, Alan T., 4,212,194, Cl. 73-73.000.

Smith, Carl W.: *See*—
Spurlock, Eugene M.; and Smith, Carl W., 4,213,194, Cl. 367-14.000.

Smith, Colin H. S., to Data Card (U.K.) Limited. Master cards for hectographic printing. 4,213,041, Cl. 235-487.000.

Smith, Eddie: *See*—
Reedy, Lonnie T.; and Smith, Eddie, 4,212,571, Cl. 408-82.000.

Smith, Harry M. Multi-diameter, hemisphere, center-of-hole locating probe. 4,212,106, Cl. 33-172.00D.

Smith, Inja K.: *See*—
Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., 4,212,153, Cl. 368-62.000.

Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; and Miles, Peter D., 4,212,875, Cl. 424-273.00R.

Smith, Norman: *See*—
Fisher, Ronald; and Smith, Norman, 4,212,906, Cl. 427-237.000.

Smith, Robert J.: *See*—
Beach, Donald J.; and Smith, Robert J., 4,213,042, Cl. 250-223.00B.

Smith, William C. Screwdriver. 4,212,336, Cl. 145-61.00L.

Smolinski, Ronald E. Rotary vane machine with cam follower retaining means. 4,212,603, Cl. 418-256.000.

Smolko, Gennady G.; Akushsky, Izrail Y.; and Burtsev, Vladimir M. Apparatus for detecting and correcting errors in arithmetic processing of data represented in the numerical system of residual classes. 4,213,188, Cl. 364-739.000.

Snam Progetti, S.p.A.: *See*—
Nuzzolo, Carlo; Vignola, Rodolfo; and Groggia, Antonio, 4,212,799, Cl. 260-123.500.

Snyder, Eugene T. Electrically operated multiple security bolt door locking device. 4,212,489, Cl. 292-33.000.

Snyder, Joe W., to Nite Train-R Enterprises, Inc. Moisture responsive pad for treatment of enuresis. 4,212,295, Cl. 128-138.00A.

Snyder, Vernon W. Barbecue food holder. 4,212,235, Cl. 99-441.000.

Snyder, Wesley L. Windage and elevation mechanism for laser aimed weapons. 4,212,109, Cl. 33-241.000.

Sobolev, Jury V.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Societe Anonyme, Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Luder, Jacques, 4,213,014, Cl. 179-170.200.

Societe Anonyme Francaise du Ferodo: *See*—
Billet, Rene, 4,212,380, Cl. 192-106.200.

Societe ASTECH: *See*—
Fage, Etienne, 4,212,442, Cl. 244-110.00B.

Societe Miniere et Metallurgique de Penarroya: *See*—
Cuvelier, Jean-Philippe; and Gistau, Henri, 4,212,429, Cl. 241-26.000.

Societe' Nazionale Industria Applicazioni Viscosa S.p.A. (Snia Viscosa): *See*—
Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., 4,212,932, Cl. 429-111.000.

Societe Nouvelle de Connexion: *See*—
Prunier, Jean-Claude; and Bellemon, Yves, 4,212,514, Cl. 350-96.210.

Soecknick, Erhard, to Messer Griesheim GmbH. Device in the form of a double-walled pipe for cooling continuous profiles. 4,212,171, Cl. 62-63.000.

Sofronov, Evgeny I.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Solarein, Inc.: *See*—
Reinert, Charles P., 4,212,292, Cl. 126-449.000.

Solid State Scientific Inc.: *See*—
Colussi, Elio J., 4,213,141, Cl. 357-74.000.

Solomon, Barry A.; and Lysaght, Michael J., to United States of America, America. Filtration apparatus for separating blood cell-containing liquid suspensions. 4,212,742, Cl. 210-247.000.

Solvay & Cie.: *See*—
Michel, Edmond, 4,212,841, Cl. 264-530.000.

Somar Manufacturing Co., Ltd.: *See*—
Goto, Yuzuru; Daigo, Yukitaka; and Hitotsuyanagi, Mikio, 4,212,733, Cl. 210-36.000.

Sommer, Ruediger: *See*—
Muenchow, Juergen; and Sommer, Ruediger, 4,213,155, Cl. 358-262.000.

Sony Corporation: *See*—
Makino, Yoshimi; and Okamoto, Tsutomu, 4,212,688, Cl. 148-31.550.
Nagumo, Fumio, 4,213,145, Cl. 358-43.000.
Sekiguchi, Fumio, 4,212,439, Cl. 242-206.000.
Uedaira, Satoru; and Ito, Shigeyasu, 4,212,344, Cl. 164-87.000.

Sorensen, Per G.: *See*—
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.

Sorg GmbH & Co. KG: *See*—
Pieper, Helmut, 4,213,002, Cl. 13-6.000.

Special Metals Corporation: *See*—
Barton, Bruce L.; Johnson, Walter E.; and Notaro, Anthony J., 4,212,665, Cl. 75-10.00V.

Speelman, Irving A.: *See*—
Raczkowski, Jan; and Speelman, Irving A., 4,212,390, Cl. 206-339.000.

Speer, Richard. Pneumatically-operated ball projecting device. 4,212,284, Cl. 124-56.000.

Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., to Eaton Corporation. Integrated gate turn-off device with non-regenerative power portion and lateral regenerative portion having split emission path. 4,213,067, Cl. 307-252.00C.

Spencer, Donald J.: *See*—
Warren, Walter R., Jr.; Durran, Donald A.; and Spencer, Donald J., 4,213,102, Cl. 331-94.50G.

Spener, Gerhard: *See*—
Hrovat, Milan; Huschka, Hans; and Spener, Gerhard, 4,212,898, Cl. 427-6.000.

Sperber, Karl: *See*—
Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., 4,212,673, Cl. 430-496.000.

Sperry Corporation: *See*—
Butler, L. Dennis, 4,212,578, Cl. 414-39.000.
Chaumont, Gerard P. L., 4,212,143, Cl. 56-14.400.
Duncan, Damon H.; and Klemes, Martin S., 4,212,443, Cl. 244-177.000.
Gravel, Robert L., 4,212,513, Cl. 350-96.150.

Spietschka, Ernst: *See*—
Kroh, Adolf; Fuchs, Otto; and Spietschka, Ernst, 4,212,975, Cl. 546-49.000.

Spijkerman, Johan: *See*—
Linder, Sten; and Spijkerman, Johan, 4,212,342, Cl. 164-4.000.

Splan, Robert. Automobile headlight reminder device. 4,212,260, Cl. 116-28.00R.

Spurlock, Eugene M.; and Smith, Carl W., to SRI International. Acoustic archeological mapping method. 4,213,194, Cl. 367-14.000.

Square D Company: *See*—
Zylstra, Henry J.; and Jansen, Harley W., 4,213,165, Cl. 361-94.000.

SRI International: *See*—
Spurlock, Eugene M.; and Smith, Carl W., 4,213,194, Cl. 367-14.000.

Stachiw, Jerry D.: *See*—
Endicott, Donald L., Jr.; and Stachiw, Jerry D., 4,213,029, Cl. 219-209.000.

Staff, Paul: *See*—
Hilton, Brian T.; and Staff, Paul, 4,212,739, Cl. 210-130.000.

Stakun, Vitie J.; and White, William H., to RCA Corporation. Testing the divergence of a beam from a laser. 4,212,540, Cl. 356-354.000.

Standard Oil Company: *See*—
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,212,766, Cl. 252-432.000.

Standard Oil Company (Indiana): *See*—
Fenoglio, David J., 4,212,992, Cl. 562-492.000.
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,212,729, Cl. 208-210.000.

Stannow, Jorgen C.: *See*—
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.

Stapleton, Robert G.: *See*—
Hirsch, John M.; and Stapleton, Robert G., 4,212,201, Cl. 73-290.00V.

Star S.A.: *See*—
Schatteman, Etienne A. M., 4,212,438, Cl. 242-201.000.

Starkweather, Gary K.: *See*—
DeBenedictis, Leonard C.; and Starkweather, Gary K., 4,213,157, Cl. 358-293.000.

Stecklein, Gary L., to Deere & Company. Linkage to allow increased angular rotation of backhoe boom. 4,212,582, Cl. 414-694.000.

Steer, John E., to Bendix Corporation, The. Master cylinder reservoir cover. 4,212,411, Cl. 220-347.000.
Stein, Christian: *See—*
Veith, Werner; and Stein, Christian, 4,213,072, Cl. 313-217.000.
Stein Industrie: *See—*
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.
Stella, Joseph A., to Polaroid Corporation. Motion picture film cassette having removable film stripping web. 4,212,521, Cl. 352-130.000.
Stelling, David; Barker, David H.; and Weston, Terence E., to Rank Organisation Limited, The. Analytical apparatus. 4,212,845, Cl. 422-82.000.
Stephan, Leonard P., to Boeing Company, The. Gust bias signal-generating circuit for aircraft throttle control system. 4,212,444, Cl. 244-182.000.
Stern, Richard M.: *See—*
Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., 4,212,865, Cl. 424-250.000.
Stertzbach, Glenn A., to Vonscot Industries. Abrading elements. 4,212,136, Cl. 51-204.000.
Stewart, Paul E., to United States of America, Army. Dual-mode firing mechanism. 4,212,227, Cl. 89-129.00B.
Stewart-Warner Corporation: *See—*
Rasmussen, Howard J.; and Subluskey, William C., 4,212,482, Cl. 280-289.00D.
Steyvers, Weinfried; and Zilges, Franz-Josef, to Schloemann-Siemag Aktiengesellschaft. Indirect metal extrusion and tube press and a sealing plate and a pressure plate therefor. 4,212,182, Cl. 72-253.00A.
Stocker, Charles T.: *See—*
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.
Stocker, Rudolf, to Mettler Instruments AG. Electrical scale with improved immunity to environmental disturbances. 4,212,361, Cl. 177-200.000.
Stoddard, Deborah: *See—*
Baldwin, Blair F.; and Stoddard, Deborah, 4,212,117, Cl. 35-31.00C.
Baldwin, Blair F.; and Stoddard, Deborah, 4,212,118, Cl. 35-31.00C.
Stoeckigt, Dieter: *See—*
Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, 4,212,760, Cl. 252-156.000.
Stoelting, Inc.: *See—*
Thomson, Meredith C., 4,212,547, Cl. 366-325.000.
Stohr, Gunter: *See—*
Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, 4,212,925, Cl. 428-447.000.
Stokke, Olaf M.: *See—*
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.
Stoll, Kurt; and deFries, Jan R., to Festo-Maschinenfabrik Gottlieb Stoll. Multiway valve. 4,212,320, Cl. 137-625.600.
Stone, Harvey: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.
Stone, William B.; and Holbert, Marvin L., Jr., to Lynes, Inc. Method and apparatus for leveling templates for offshore subterranean wells. 4,212,562, Cl. 405-195.000.
Strauch, Dieter, to Pluss-Staufer AG. Corrosion preventative pigment and composition. 4,212,674, Cl. 106-14.050.
Streltsov, Rev V.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Stroh, Alan E.: *See—*
Brooks, Hubert C.; and Stroh, Alan E., 4,212,509, Cl. 339-95.00D.
Stromberg, Nils E., to Sunds Aktiebolag. Method and apparatus for stacking bales. 4,212,579, Cl. 414-95.000.
Struthoff, Gustav L.: *See—*
United States of America, National Aeronautics and Space Administration; and Struthoff, Gustav L., 4,213,051, Cl. 250-457.000.
Struttmann, Hilarius S.: *See—*
Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., 4,212,502, Cl. 308-3.00R.
Stryjewski, Walter A.: *See—*
O'Brien, Robert J.; and Stryjewski, Walter A., 4,212,529, Cl. 355-3.00R.
Subluskey, William C.: *See—*
Rasmussen, Howard J.; and Subluskey, William C., 4,212,482, Cl. 280-289.00D.
Suganuma, Buro: *See—*
Matsui, Isamu; and Suganuma, Buro, 4,212,433, Cl. 242-35.50A.
Sugita, Jitsuo: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.
Suhara, Manabu; and Arai, Kiyotaka, to Asahi Glass Company, Limited. Electrolysis of aqueous solution of alkali metal chloride. 4,212,713, Cl. 204-98.000.
Sumimoto, Shinzaburo: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.
Sumitomo Chemical Company, Limited: *See—*
Kobayashi, Akio; and Mashita, Kentaro, 4,212,961, Cl. 526-151.000.
Koga, Kenji; and Terashima, Shiro, 4,212,828, Cl. 568-314.000.
Ohsumi, Tadashi; and Itaya, Nobushige, 4,212,829, Cl. 568-433.000.
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, 4,212,879, Cl. 424-274.000.
Sunds Aktiebolag: *See—*
Stromberg, Nils E., 4,212,579, Cl. 414-95.000.
Suresh, Dev D.: *See—*
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,212,766, Cl. 252-432.000.
Survival Technology, Inc.: *See—*
Homan, Gerlof, 4,212,886, Cl. 424-308.000.
Suzuki, Hidenori, to Minolta Camera Kabushiki Kaisha. Slit exposure type copying apparatus. 4,212,532, Cl. 355-60.000.
Suzuki, Koro, to Whyte & Hirschboeck S. C. System of connecting a wire telecommunication and a radio communication. 4,213,009, Cl. 179-2.0EA.
Suzuki, Nobuo: *See—*
Saito, Koukichi; and Suzuki, Nobuo, 4,212,693, Cl. 156-173.000.
Suzuki, Shirou: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.
Svenska Inhalator AB: *See—*
Larsson, Bert G. K., 4,212,570, Cl. 408-95.000.
Svistunova, Natalya S.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Swanson, Billy L., to Phillips Petroleum Company. Shear-thickening compositions. 4,212,747, Cl. 252-8.55R.
Swanson, Ronald V. Grapple. 4,212,577, Cl. 414-23.000.
Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., to Northern Research and Engineering Corporation. Centrifugal compressor. 4,212,585, Cl. 415-53.00R.
Swartz, Paul F.: *See—*
United States of America, National Aeronautics and Space Administration; Johnson, John E., Jr.; and Swartz, Paul F., 4,212,297, Cl. 128-207.140.
Sweany, Louis P.: *See—*
Learn, Richard L.; and Sweany, Louis P., 4,213,121, Cl. 340-384.00E.
Swift, Harold E.: *See—*
Madgavkar, Ajay M.; Swift, Harold E.; and Cupples, Barrett L., 4,213,001, Cl. 585-510.000.
Swiss Aluminium Ltd.: *See—*
Klotzbucher, Hansjong; Kolb, Erwin; and Hilge, Bernhard, 4,212,451, Cl. 266-50.000.
Mittelmann, Gerhard, 4,212,406, Cl. 220-1.500.
Szmuszkovicz, Jacob, to Upjohn Company, The. Anilide derivatives as antidepressants. 4,212,888, Cl. 424-324.000.
Szmuszkovicz, Jacob: *See—*
Lednicer, Daniel; and Szmuszkovicz, Jacob, 4,212,878, Cl. 424-274.000.
Szpitalak, Wesley J.: *See—*
Payne, Robert D.; Buczkowski, Fred E.; and Szpitalak, Wesley J., 4,212,266, Cl. 118-712.000.
Tachikawa, Hajime: *See—*
Satoh, Kenji; Tachikawa, Hajime; and Watanabe, Mitsuru, 4,213,023, Cl. 219-10.55B.
Taiho Pharmaceutical Company, Limited: *See—*
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.
Takada, Masaki: *See—*
Otani, Masaru; Satoi, Shuzo; and Takada, Masaki, 4,212,858, Cl. 424-118.000.
Takahata, Jungo, to Honey Bee Corporation. Acidified whole milk beverage and method of preparation. 4,212,893, Cl. 426-330.200.
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, to Rhythm Watch Co. Ltd. Time striking device for electronic timepiece. 4,212,154, Cl. 368-248.000.
Takeda Chemical Industries, Ltd.: *See—*
Aibe, Toshio; and Itoga, Kiyoshi, 4,212,852, Cl. 423-230.000.
Takehara, Keishin: *See—*
Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, 4,212,697, Cl. 427-389.800.
Takei, Haruo: *See—*
Mihara, Yuji; Takei, Haruo; and Inoue, Noriyuki, 4,212,672, Cl. 430-494.000.
Takenaka Komuten Company, Limited: *See—*
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, 4,212,548, Cl. 366-348.000.

Takeno, Seiichi: *See*—
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.
Takeuchi, Seb o; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, t Rikagaku Kenkyusho. Nicotinamide-ammonium hydroxide plant growth regulator compositions. 4,212,664, Cl. 71-94.000.
Takusagawa, Kiyoshi: *See*—
Kikuchi, Tsuyoshi; and Takusagawa, Kiyoshi, 4,212,622, Cl. 425-444.000.
Talleu, Patrick: *See*—
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.
Tallon, Roger W.: *See*—
Fraass, Ronald G.; and Tallon, Roger W., 4,213,045, Cl. 250-370.000.
Tamaru, Munetaka, to Citizen Watch Co., Ltd. Electronic timepiece. 4,212,158, Cl. 368-80.000.
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, to Kawasaki Jukogyo Kabushiki Kaisha. Ion-nitriting process. 4,212,687, Cl. 148-16.600.
Tanaka, Minoru; Yagi, Kenkichi; and Mizuguchi, Shunji, to Toray Industries, Inc. Dense, flexible composite sheet material. 4,212,916, Cl. 428-290.000.
Tanaka, Motoaki: *See*—
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.
Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. 1-Phenyl-3-(3-trifluoromethylphenyl)-2-propanol and process for its production. 4,212,998, Cl. 568-807.000.
Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. 1-Phenyl-3-(3-trifluoromethylphenyl)-1,2-propane diol and process for its production. 4,212,999, Cl. 568-807.000.
Tang, Louis S., to Bendix Corporation, The. Hydraulic brake booster and relief valve therefor. 4,212,166, Cl. 60-582.000.
Tanner, David E.: *See*—
Van Hagan, Thomas H.; and Tanner, David E., 4,212,351, Cl. 165-160.000.
Tarabaev, Gennady I.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.
Tarzia, Giorgio; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Aminopyrrole derivatives. 4,212,806, Cl. 260-326.200.
Tasope' Limited: *See*—
Hillhouse, Charles R., 4,212,263, Cl. 118-37.000.
Tax, Lambert J. W. M., to Akzona Incorporated. Branched chain and cycloaliphatic esters of the androstane and oestrane series and pharmaceutical compositions containing same. 4,212,864, Cl. 424-243.000.
Taylor, Brian P.; Davis, David J.; and Wasdell, Roy N., to Plessey Handel und Investments AG. Disc record players. 4,212,469, Cl. 274-23.00A.
Taylor, Earnest R. Method and apparatus for charging sealed Ni-Cad batteries. 4,213,081, Cl. 320-40.000.
Taylor, Glenn N., to Kendall Company, The. Balloon testing device. 4,212,192, Cl. 73-45.500.
Taylor, Lynn J.: *See*—
Tobias, John W.; and Taylor, Lynn J., 4,212,955, Cl. 525-5.000.
Taylor, Richard J.: *See*—
Carroll, Michael H.; Taylor, Richard J.; and McCubbin, Peter J., 4,213,012, Cl. 179-84.00R.
Taylor, Thomas R.; and Puletti, Paul P., to National Starch & Chemical Corporation. PET Bottle assemblies produced by using a hot melt adhesive comprising a block copolymer and a tackifying resin. 4,212,910, Cl. 428-35.000.
Taylor, William A.: *See*—
Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., 4,213,174, Cl. 364-104.000.
TBA Industrial Products Limited: *See*—
Davies, John I., 4,212,792, Cl. 260-42.180.
TDK Electronics Company Limited: *See*—
Hiromitsu, Hirayama, 4,213,084, Cl. 323-56.000.
Shiba, Haruo; and Okamura, Masatoshi, 4,212,437, Cl. 242-199.000.
Tecumseh Products Company: *See*—
von Kaler, Roland L.; and Jolliff, Norman E., 4,212,210, Cl. 74-375.000.
Teijin Limited: *See*—
Matsumura, Seiji; and Kusumoto, Nobuo, 4,213,056, Cl. 250-559.000.
Teltscher, Erwin S. Device and method of illuminating a target by the eye-motion of an operator. 4,212,226, Cl. 89-41.00L.
Temkina, Vera Y.: *See*—
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.
ten Haken, Pieter: *See*—
Clark, Michael T.; and ten Haken, Pieter, 4,212,868, Cl. 424-263.000.
Terasaka, Kunihiko: *See*—
Nomura, Takao; Terasaka, Kunihiko; and Sakata, Isao, 4,212,954, Cl. 521-159.000.
Terashima, Shiro: *See*—
Koga, Kenji; and Terashima, Shiro, 4,212,828, Cl. 568-314.000.
Terekhova, Alla I.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Terry, Angel F.: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., 4,213,040, Cl. 235-476.000.
Teubner, Volker: *See*—
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, 4,212,545, Cl. 366-152.000.
Texaco Development Corporation: *See*—
Hotchkiss, Philip; Gipson, Robert M.; and Nieh, Edward C. Y., 4,212,820, Cl. 260-561.00N.
Marquis, Edward T.; and Brader, Walter H., Jr., 4,212,821, Cl. 260-570.00D.
Texaco Inc.: *See*—
Divine, David L., 4,212,198, Cl. 73-151.000.
Hall, Wilbur L., 4,212,353, Cl. 166-303.000.
Pitts, Robert W., Jr., 4,212,530, Cl. 355-14.00R.
Texas Instruments Incorporated: *See*—
Jones, James J., 4,212,499, Cl. 303-103.000.
McElroy, David J., 4,213,142, Cl. 3,7-91.000.
Noble, Robert T.; Penz, Perry A.; and Marks, Burton W., 4,212,159, Cl. 368-82.000.
Rao, G. R. Mohan, 4,213,139, Cl. 357-41.000.
Schmidt, Robert W., 4,213,177, Cl. 364-200.000.
Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Isoxazole-5-alkyl dithiophosphoric acid derivatives. 4,212,861, Cl. 424-200.000.
Theobald, Jurgen: *See*—
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.
Thermacore, Inc.: *See*—
Eastman, George Y., 4,212,347, Cl. 165-46.000.
Thermodynamics Corporation: *See*—
Lux, Robert J., Jr., 4,213,111, Cl. 336-65.000.
Thermon Manufacturing Company: *See*—
Goss, David C.; and Hageman, Richard A., 4,213,034, Cl. 219-535.000.
Thiel, Max: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.
Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, to Bayer Aktiengesellschaft. Edge sealing for filter cloths. 4,212,746, Cl. 210-495.000.
Thoma, Peter: *See*—
Habermann, Wolfgang; Thoma, Peter; and Wintermantel, Klaus, 4,212,725, Cl. 204-290.00F.
Thomas Hill (Rotherham) Limited: *See*—
Burgess, William F., 4,212,250, Cl. 105-50.000.
Thomson-CSF: *See*—
Dubois, Jean-Claude; Nguyen, Huu Tinh; and Zann, Annie, 4,212,762, Cl. 252-299.000.
Hartemann, Pierre; and Torguet, Roger, 4,212,206, Cl. 73-606.000.
Thomson, Meredith C., to Stoelting, Inc. Apparatus for blending fluid and soft particulate food constituents. 4,212,547, Cl. 366-325.000.
Ti Fords Limited: *See*—
Poynton, Bertram G.; and Waite, Phillip S., 4,212,140, Cl. 53-289.000.
Tidd, Donald G.: *See*—
Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., 4,212,673, Cl. 430-496.000.
Tiefenbacher, Hubert; Kraus, Friedrich; and Matthias, Guenther, to BASF Aktiengesellschaft. Manufacture of pellets from feed meals. 4,212,890, Cl. 426-69.000.
Tiemann, Reinhard, to Continental Gummi-Werke Aktiengesellschaft. Vehicle wheel with annular emergency support. 4,212,338, Cl. 152-158.000.
Tieszen, Dale O., to Phillips Petroleum Company. Poly(arylene sulfide) resin coating. 4,212,922, Cl. 428-419.000.
TIF Instruments, Inc.: *See*—
Liebermann, Leonard N., 4,213,089, Cl. 324-115.000.
Tilby, Sydney E., to Intercane Systems, Inc. Apparatus for forming boards from plant fibers. 4,212,616, Cl. 425-256.000.
Ting, Vincent W.: *See*—
Evans, James M.; and Ting, Vincent W., 4,212,781, Cl. 260-29.4UA.
Titus, Paul E., to Shell Oil Company. Fragmented polymers as friction reducers in pipeline transportation of products. 4,212,312, Cl. 137-13.000.
Titzenthaler, Eckart: *See*—
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.
Tkachev, Vasily D.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A.,

administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Tobias, John W.; and Taylor, Lynn J., to Owens-Illinois, Inc. Degradable plastic composition containing ortho ester. 4,212,955, Cl. 525-5.000.
Tobias, Michael A.: *See*—
Martinez, Carlos J.; and Tobias, Michael A., 4,212,776, Cl. 260-18.0EP.
Toda, Toshimasa: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Toder, Ilya A.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.
Toelke, Lester W.: *See*—
Lee, Harlan E.; and Toelke, Lester W., 4,212,240, Cl. 100-53.000.
Tokico Ltd.: *See*—
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Knechtel, Wilhelm; and Tokiwa, Taisuke, 4,212,264, Cl. 118-653.000.
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Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.
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Hidaka, Kazutaka, 4,213,133, Cl. 343-854.000.
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Qureshi, Azam S., 4,212,323, Cl. 137-625.610.
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Tomy Kogyo Co., Inc.: *See*—
Ikeda, Masaki, 4,212,412, Cl. 221-81.000.
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Toppan Printing Co., Ltd.: *See*—
Yokokoji, Shyoji; and Hoshino, Kazuhisa, 4,212,299, Cl. 128-272.000.
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Otani, Masaru; Satoi, Shuzo; and Takada, Masaki, 4,212,858, Cl. 424-118.000.
Toyo Kogyo Co., Ltd.: *See*—
Kaneda, Yoshihisa, 4,212,276, Cl. 123-516.000.
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Katsura, Tadahiko, 4,212,956, Cl. 525-60.000.
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Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,945, Cl. 435-212.000.
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Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, 4,212,500, Cl. 303-115.000.
Kawaguchi, Hiroshi, 4,212,367, Cl. 180-271.000.
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Mizuno, Toru; and Kitano, Masao, 4,212,472, Cl. 277-12.000.
Nagasaka, Yasumasa; Sekiyama, Kenichi; and Masuyama, Yasushi, 4,212,629, Cl. 432-10.000.
Nakanishi, Kiyoshi; and Okumura, Takeshi, 4,212,270, Cl. 123-41.090.
Nomura, Takao; Terasaka, Kunihiko; and Sakata, Isao, 4,212,954, Cl. 521-159.000.
Transformateurs BC and EFFA: *See*—
Rousseau, Alain; and Ramel, Francois, 4,212,200, Cl. 73-861.470.
Travis, Terence: *See*—
Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, 4,213,190, Cl. 364-900.000.
Triest, Willard G.: *See*—
Jones, Walter L.; and Triest, Willard G., 4,212,487, Cl. 285-95.000.
Trio Kabushiki Kaisha: *See*—
Morinaga, Mitsuyoshi, 4,212,470, Cl. 274-37.000.
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Triplex Safety Glass Company Limited: *See*—
Brereton, Paul A.; and Challis, Roger, 4,212,662, Cl. 65-106.000.
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Policand, Gerard; Trompette, Jacques; and Bourrinet, Francis, 4,213,101, Cl. 331-78.000.
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Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.
Truly Magic Products, Inc.: *See*—
Kohler, Henry A., 4,212,556, Cl. 401-208.000.
TRW Inc.: *See*—
Dawson, John M., 4,213,043, Cl. 250-283.000.
Hodge, Malcolm H., 4,212,512, Cl. 350-96.150.
Tsibris, John C. M., to Board of Reagents, for and on behalf of the University of Florida. Method of coating supports using addition copolymers of aminimides. 4,212,905, Cl. 427-221.000.
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Tsujimura, Tozaburo, to Yasui Sangyo Co., Ltd. Swing-arm device for a vehicle lift. 4,212,449, Cl. 254-89.00H.
Tsuruda, Kunihiro: *See*—
Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,212,854, Cl. 423-247.000.
Tsykanov, Vladimir A.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
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Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, 4,212,984, Cl. 560-18.000.
Tupitsyn, Lev V.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Turbett, Robert J.: *See*—
Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., 4,212,756, Cl. 252-63.200.
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Alman, Donald W.; Gerwitz, Paul F.; and Tygard, Charles M., 4,213,112, Cl. 338-183.000.
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Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.
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Hilton, Brian T.; and Staff, Paul, 4,212,739, Cl. 210-130.000.
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Ueno, Yutaka: *See*—
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.

Uhl, Dieter: *See*—
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.

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Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, 4,212,984, Cl. 360-18.000.

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Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.

Umnov, Mikhail P.: *See*—
Blizniuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Blizniuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

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Arney, William C., Jr., 4,212,928, Cl. 428-514.000.
Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., 4,212,756, Cl. 252-63.200.
Doherty, Edward J., III, 4,213,054, Cl. 250-505.000.
Hodakowski, Leonard E.; and Jenkinson, Richard D., 4,212,899, Cl. 427-44.000.
Kamp, Ewald A., 4,212,337, Cl. 150-3.000.
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Voituriez, Henry; and Aymard, Reni, 4,212,253, Cl. 110-182.500.

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White, Charles A.; and Williams, W. Ronald, 4,212,269, Cl. 119-17.000.

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Agriculture: *See*—
Friedman, Mendel, 4,212,800, Cl. 260-123.700.
Air Force: *See*—
Acker, Roy M.; and Lui, Kenneth, 4,213,004, Cl. 174-151.000.
Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., 4,212,441, Cl. 244-46.000.
Cole, Lanier G., 4,213,127, Cl. 343-5.0CF.
Fraass, Ronald G.; and Tallon, Roger W., 4,213,045, Cl. 250-370.000.
Garbett, Matthew G., 4,213,168, Cl. 361-225.000.
Poirier, J. Leon, 4,213,123, Cl. 340-552.000.
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.
Warren, Walter R., Jr.; Durran, Donald A.; and Spencer, Donald J., 4,213,102, Cl. 331-94.50G.
America: *See*—
Solomon, Barry A.; and Lysaght, Michael J., 4,212,742, Cl. 210-247.000.
Army: *See*—
Ethridge, Noel H., 4,212,191, Cl. 73-861.470.
Longinotti, David M., 4,213,128, Cl. 343-6.50R.
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,212,317, Cl. 137-565.000.
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Pecori, Peter M., 4,213,093, Cl. 324-329.000.
Russel, William J.; and Garnis, Elizabeth A., 4,212,701, Cl. 156-665.000.
Stewart, Paul E., 4,212,227, Cl. 89-129.00B.
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Eissenberg, David M.; and Liu, Yin-An, 4,212,651, Cl. 44-1.0SR.
Fasching, George E., 4,213,184, Cl. 364-574.000.
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,212,929, Cl. 429-37.000.
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Wright, Ralph R., 4,212,907, Cl. 427-309.000.
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Beuyukian, Charles S.; Heisman, Robert M.; Haynie, Cyrus C.; and Ruppe, Emil P. Heat treat fixture and method of heat treating. 4,212,690, Cl. 148-131.000.
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Johnson, John E., Jr.; and Swartz, Paul F. Micro-fluid exchange coupling apparatus. 4,212,297, Cl. 128-207.140.
Nagano, Satoshi. Redundant operation of counter modules. 4,213,064, Cl. 307-219.000.
Struthoff, Gustav L. Dual acting slit control mechanism. 4,213,051, Cl. 250-457.000.
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Bikle, Paul F.; and Montoya, Lawrence C., 4,212,199, Cl. 73-861.660.
Kaiser, Julius A., Jr., 4,213,131, Cl. 343-844.000.
Ludwig, Lawrence P., 4,212,477, Cl. 277-193.000.
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Brown, Craig K., 4,213,099, Cl. 330-297.000.
Eaton, Jefferson O.; and Lunt, Wilbur B., 4,212,246, Cl. 102-270.000.
Endicott, Donald L., Jr.; and Stachiw, Jerry D., 4,213,029, Cl. 219-209.000.
Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., 4,213,199, Cl. 367-117.000.
Mahaffey, Redge A.; Goldstein, Shyke A.; Golden, Jeffry; and Cooperstein, Gerald, 4,213,073, Cl. 313-310.000.
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., 4,213,198, Cl. 367-113.000.

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Brockmann, Klaus-Dieter K.; and Dijkmans, Eise C., 4,213,016, Cl. 179-175.30R.
de Boer, Eeltje, 4,213,144, Cl. 358-12.000.
Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., 4,213,100, Cl. 331-94.50D.
Meek, Gerrit J., 4,213,050, Cl. 250-445.00T.
Schrijvers, Joost E.; and Boers, Martinus W. A., 4,213,055, Cl. 250-483.000.

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Anspon, Harry D., 4,212,789, Cl. 260-33.6AQ.
Galer, Herbert W., 4,212,410, Cl. 220-324.000.
Nemeth, Edward J.; McGreal, Joseph E.; and Howell, John L., 4,212,851, Cl. 423-230.000.

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Cullen, Donald E.; and Wagner, Robert A., 4,213,104, Cl. 333-150.000.
Duvall, David S.; King, William H.; and Owczarski, William A., 4,213,026, Cl. 219-75.000.
Fradenburgh, Evan A., 4,212,588, Cl. 416-141.000.
Newirth, David M.; and Koenig, Eugene W., 4,212,161, Cl. 60-39.28R.

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Van Meter, Arch; and Gartner, William J., 4,212,743, Cl. 210-282.000.

University of Akron, The: *See*—
Chen, Chun-Fu, 4,213,134, Cl. 346-1.100.

University of Alabama, The: *See*—
Myrick, James E.; and Hall, Leo M., 4,212,939, Cl. 435-19.000.

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Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., 4,212,717, Cl. 204-158.00R.
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,212,719, Cl. 204-165.000.
Winters, Harry K., 4,212,313, Cl. 137-39.000.

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Kao, David T.; and Wood, Don J., 4,212,566, Cl. 406-68.000.

UOP Inc.: *See*—
Antos, George J., 4,212,727, Cl. 208-111.000.
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Halter, Mark A.; and Malloy, Thomas P., 4,212,710, Cl. 204-78.000.
Halter, Mark A.; and Malloy, Thomas P., 4,212,711, Cl. 204-78.000.
Hayes, John C.; and Pollitzer, Ernest L., 4,212,770, Cl. 252-441.000.

Upjohn Company, The: *See*—
Axen, Udo F., 4,212,986, Cl. 560-121.000.
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Johnson, Roy A., 4,212,968, Cl. 542-426.000.
Lednicer, Daniel; and Szmuszkovicz, Jacob, 4,212,878, Cl. 424-274.000.
Magerlein, Barney J., 4,212,811, Cl. 260-343.30P.
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Robert, Andre' , 4,212,884, Cl. 424-285.000.
Szmuszkovicz, Jacob, 4,212,888, Cl. 424-324.000.

Upton, Thomas E., to Dresser Industries, Inc. Gripping member for well tools. 4,212,352, Cl. 166-206.000.

Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Release device in a camera having a motor drive unit. 4,212,525, Cl. 354-173.000.

Urbinati, Mario, to Fiat Societa per Azichi. Device for the removal of particles of lead from the exhaust gases of an internal combustion engine. 4,212,657, Cl. 55-319.000.

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Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, 4,212,951, Cl. 528-495.000.

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Chadwick, Duane G., 4,212,593, Cl. 417-53.000.

Vacha, Fred P. Portable rust inhibitor applicator for a vehicle. 4,212,388, Cl. 206-230.000.

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Vaessen, Dorotheus C. L.: *See*—
Mulder, Willem; Vaessen, Dorotheus C. L.; and De Lange, Nicolaas H., 4,213,126, Cl. 343-5.0SM.

Valenzona, Joseph F., to Orion Industries, Inc. Beverage drinking container. 4,212,408, Cl. 220-254.000.

Valtion Teknillinen Tutkimuskeskus: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., to Philip Morris Incorporated. Unitary pack of smoking tobacco products containing polymeric alcohol flavorant-release compositions. 4,212,310, Cl. 131-17.00R.

Vance, Reginald W. Animal trap. 4,212,128, Cl. 43-81.000.

van der Burg, Sjirk; Grosch, Karl A.; and Bertrand, Marcel J. Radial tire with bead reinforcing elements. 4,212,340, Cl. 152-355.000.

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Dolton, Anthony D., 4,212,505, Cl. 308-79.00A.

van Donk, Cornelis; and van Mullekom, Hubert P., to Ruti-Te Strake B.V., a Dutch Company. Reed baulk unit. 4,212,330, Cl. 139-435.000.

Van Hagan, Thomas H.; and Tanner, David E., to United States of America, Energy. Articulated module flow guide system. 4,212,351, Cl. 165-160.000.

Van Meter, Arch; and Gartner, William J., to Universal Water Systems, Inc. Filter. 4,212,743, Cl. 210-282.000.

van Mullekom, Hubert P.: *See—*
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van Neerbos, Abraham; and van Oosterhout, Adrianus C. J., to Akzo N.V. Method for treating a substrate with a radiation and chemically curable coating composition. 4,212,901, Cl. 427-53.100.

van Oosterhout, Adrianus C. J.: *See—*
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van Velthoven, Armand J.: *See—*
Jones, Robert K.; and van Velthoven, Armand J., 4,212,683, Cl. 148-1.500.

Varian Associates, Inc.: *See—*
Kneip, George D., Jr., 4,212,169, Cl. 62-45.000.
Kneip, George D., Jr., 4,213,092, Cl. 324-319.000.

Varta Batterie Aktiengesellschaft: *See—*
Salamon, Klaus, 4,212,934, Cl. 429-181.000.

Vasiliev, Sergei V.: *See—*
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.

VDO Adolf Schindling AG.: *See—*
Schlick, Horst, 4,212,425, Cl. 239-133.000.

VEB Kombinat Fortschritt: *See—*
Eistert, Theodor, 4,212,146, Cl. 56-98.000.

Veba-Chemie Atkiengesellschaft: *See—*
Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, 4,212,962, Cl. 528-45.000.

Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., to Howmet Turbine Components Corporation. Method for the production of precision shapes. 4,212,669, Cl. 75-226.000.

Veeder Industries Inc.: *See—*
Fleischer, Donald W.; and Asmundsson, Einar, 4,213,037, Cl. 235-92.00B.

Veith, Werner; and Stein, Christian, to Siemens Aktiengesellschaft. Gas discharge display device including web shaped spacing elements. 4,213,072, Cl. 313-217.000.

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Schmolzer, Gerhard; and Verdino, Heiner, 4,212,779, Cl. 260-22.0CQ.

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Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., 4,213,100, Cl. 331-94.50D.

Verner, Douglas R.: *See—*
Marchak, Roman O.; and Verner, Douglas R., 4,213,180, Cl. 364-431.000.

Vesperman, William C.: *See—*
Piper, George F.; Vesperman, William C.; and Wilson, Max K., 4,212,612, Cl. 425-114.000.

Vianova Kunstharz, A.G.: *See—*
Schmolzer, Gerhard; and Verdino, Heiner, 4,212,779, Cl. 260-22.0CQ.

Vibro-Meter SA: *See—*
Cochard, Michel, 4,213,114, Cl. 340-27.00R.

Victor Company of Japan, Limited: *See—*
Nishiwaki, Yoshiro; and Izumi, Tetsuro, 4,212,471, Cl. 274-38.000.

Vignola, Rodolfo: *See—*
Nuzzolo, Carlo; Vignola, Rodolfo; and Groggia, Antonio, 4,212,799, Cl. 260-123.500.

Virginia Panel Corporation: *See—*
Cline, Quentin E.; and Floyd, Paul D., 4,212,508, Cl. 339-18.00B.

Virtis Company, Inc., The: *See—*
Adams, Robert P., 4,212,950, Cl. 435-316.000.

Vishkarev, Oleg M.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Vixie, Dennis E.: *See—*
Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., 4,212,120, Cl. 36-129.000.

Vlaskin, Egor F.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

Voest-Alpine Aktiengesellschaft: *See—*
Laimer, Friedrich; and Herrmann, Herbert, 4,212,453, Cl. 266-158.000.

Vogel, Claude; and Wicki, Heinz, to Sandoz Ltd. 1:2 Chromium complexes of disazo compounds. 4,212,802, Cl. 260-145.00A.

Voituriez, Henry; and Aymard, Reni, to Union Siderurgique du Nord et de l'Est de la France. Support device for a blast downpipe of a blast-furnace. 4,212,253, Cl. 110-182.500.

Volkert, John K.: *See—*
Penick, Ib; and Volkert, John K., 4,212,231, Cl. 93-1.00F.

Volkswagenwerk Aktiengesellschaft: *See—*
Otto, Heinz; Hoppmann, Helmut; and Henning, Bodo, 4,212,600, Cl. 417-360.000.

Vollbrecht, Rolf; and Ostertag, Karl, to Akzona Incorporated. Mat material of melt-spun polymeric filaments having discontinuous cavities. 4,212,915, Cl. 428-288.000.

Vollbrecht, Rolf: *See—*
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, 4,212,692, Cl. 156-167.000.

Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, to BASF Aktiengesellschaft. Apparatus for carrying out polymerizations from the gas phase. 4,212,847, Cl. 422-135.000.

von Alten, Theodor: *See—*
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,213,113, Cl. 338-309.000.

von Buenau, Heinrich, to Siemens Aktiengesellschaft. System for build-up and reproduction of ultrasonic images on reproduction media. 4,213,147, Cl. 358-112.000.

von Kaler, Roland L.; and Jolliff, Norman E., to Tecumseh Products Company. Multi-speed transmission with H-pattern shift. 4,212,210, Cl. 74-375.000.

Vonscot Industries: *See—*
Stertzbach, Glenn A., 4,212,136, Cl. 51-204.000.

Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I. Apparatus for removing heat from cylinders of the rotary kiln recuperator cooler. 4,212,630, Cl. 432-80.000.

Voropaev, Albert A.: *See—*
Bykhovsky, David G.; and Voropaev, Albert A., 4,213,027, Cl. 219-75.000.

Voss, Richard E.: *See—*
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,213,113, Cl. 338-309.000.

Vsesoiuznis Nauchij Issledovatelskj Institut Po Pererabotke Nefti Vniinp: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Tekhnologichesky Institut Elektrosvarochnogo Oborudovania: *See—*
Bykhovsky, David G.; and Voropaev, Albert A., 4,213,027, Cl. 219-75.000.

Vu-Do, Que, to Renault Industries Equipments et Techniques-Riet. Gear teeth rotary-shaving or roll-finishing machine. 4,212,572, Cl. 409-37.000.

Vulcan Equipment Company Limited: *See—*
Bubik, Leslie, 4,212,374, Cl. 187-8.430.

Vulliens, Philippe: *See—*
Ducommun, Joel; and Vulliens, Philippe, 4,212,541, Cl. 356-430.000.

Wacker-Chemie GmbH: *See—*
Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, 4,212,925, Cl. 428-447.000.

Wagner, David A., to Research-Cottrell, Inc. Drag conveyor and hopper assembly. 4,212,383, Cl. 198-616.000.

Wagner, Robert A.: *See—*
Cullen, Donald E.; and Wagner, Robert A., 4,213,104, Cl. 333-150.000.

Waite, Phillip S.: *See—*
Poynton, Bertram G.; and Waite, Phillip S., 4,212,140, Cl. 53-289.000.

Wakunaga Yakuhin Kabushiki Kaisha: *See—*
Yamaguchi, Hachiro, 4,212,826, Cl. 260-583.0EE.

Waldmann, Helmut: *See—*
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, 4,212,809, Cl. 260-340.50R.

Walker, John H., to Dempster Industries, Inc. Hydraulic power and control system for granular fertilizer spreaders. 4,212,428, Cl. 239-677.000.

Walker, June F. Playhouse with elements based on two modular units. 4,212,130, Cl. 46-12.000.

Walker, Randall B., to Bobrick Corporation, The. Theft deterrent toilet roll spindles. 4,212,434, Cl. 242-55.200.

Wallin, Hans-Henrik B.; and Ericsson, Eric R., to Morgardshammar Aktiebolag. Drive device without transmission for producing an elliptical shaking movement. 4,212,731, Cl. 209-366.500.

Wallis, Roger G.: *See—*
Basch, Walter E.; and Wallis, Roger G., 4,212,316, Cl. 137-543.170.

Walter J. Best Company, The: *See—*
Wikoff, Mark W., 4,212,104, Cl. 30-380.000.

Walz, Alfred. Constant-current transformer for gas-discharge tubes. 4,213,076, Cl. 315-282.000.

Warchol, Henry A. Bearing components and methods of making same. 4,212,095, Cl. 29-148.40C.

Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., to Energy Optics, Inc. Remote meter reading system providing demand readings and load control from conventional KWH meters. 4,213,119, Cl. 340-151.000.

Ward, Steven M.: *See*—
Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., 4,213,119, Cl. 340-151.000.

Warmbold, Helmut, to Chrysler Corporation. Retainer assembly for fuel tank mounted sending unit. 4,212,318, Cl. 137-590.000.

Warnecke, Ernst: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.

Warner-Lambert Company: *See*—
Baker, David C., 4,212,941, Cl. 435-92.000.
Butler, Donald E., 4,212,980, Cl. 546-288.000.

Warnken, Warren L. Solar collector. 4,212,290, Cl. 126-438.000.

Warren, Walter R., Jr.; Durran, Donald A.; and Spencer, Donald J., to United States of America, Air Force. Fluorine generator for chemical lasers. 4,213,102, Cl. 331-94.50G.

Wartusch, Johann; and Fasbender, Helmut, to Licentia Patent-Verwaltungs-G.m.b.H.; and AEG Isolier- und Kunststoff GmbH. Adhesion imparting layer of acrylonitrile-butadiene copolymer on a base material for printed circuits. 4,212,912, Cl. 428-209.000.

Wasdell, Roy N.: *See*—
Taylor, Brian P.; Davis, David J.; and Wasdell, Roy N., 4,212,469, Cl. 274-23.00A.

Washizuka, Isamu; and Kakutani, Nobuyasu, to Sharp Kabushiki Kaisha. Electronic combined protractor and calculator capable of measuring length and angle of an object. 4,213,035, Cl. 235-92.0DN.

Watabe, Keiichi, to Shimizu Construction Co., Ltd., The. Method and apparatus for forming a continuous row of cast-in-place piles to form a wall. 4,212,565, Cl. 405-269.000.

Watanabe, Junko: *See*—
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.

Watanabe, Masanobu, to Hitachi, Ltd. High voltage protection circuit. 4,213,166, Cl. 361-86.000.

Watanabe, Mitsuru: *See*—
Satoh, Kenji; Tachikawa, Hajime; and Watanabe, Mitsuru, 4,213,023, Cl. 219-10.55B.

Watanabe, Shizuhisa, to Hitachi, Ltd. Display system having voltage comparator circuit. 4,213,125, Cl. 340-753.000.

Waterworth, Peter: *See*—
Reid, Douglas C. J.; and Waterworth, Peter, 4,213,193, Cl. 365-125.000.

Watson, Allan: *See*—
Schmid, Herbert; Schneider, Helmut; and Watson, Allan, 4,212,817, Cl. 260-449.00M.

Watson, George A.: *See*—
Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., 4,213,189, Cl. 364-100.000.

Wausau Homes, Inc.: *See*—
Brown, William F., 4,212,909, Cl. 427-393.500.

Weale, John L.; and Wiles, Stephen P., to Inertia Switch Limited. Vibration detector incorporating two or more seismic elements. 4,212,208, Cl. 73-652.000.

Weatherford/Lamb, Inc.: *See*—
Chandler, Arthur R.; and Moody, Victor, 4,212,212, Cl. 81-57.170.

Weaver, Ralph W.: *See*—
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,212,196, Cl. 73-136.00R.

Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., to Rolls-Royce Limited. Marine vessel noise attenuating structure. 4,212,259, Cl. 115-73.000.

Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 21-hydroxy-20-methylpregnane derivatives. 4,212,940, Cl. 435-55.000.

Weber, Robert E.: *See*—
Carp, Ralph W.; Weber, Robert E.; and Groff, William R., 4,213,181, Cl. 364-431.000.

Weidler, Jay B.; Gracia, Bert E.; and Hull, Tommy L., to Brown & Root, Inc. Rupturable closure plug for offshore structures. 4,212,563, Cl. 405-195.000.

Weidlich, Dieter H.; and Bruckner, Willy, to Camloc Fastener GmbH. Device used in fixing with a casting material a sleeve insert having a terminal flange. 4,212,610, Cl. 425-110.000.

Weinreb, Robert. Convertible bag. 4,212,377, Cl. 190-52.000.

Weissinger, Robert B.: *See*—
Olich, Eugene E.; and Weissinger, Robert B., 4,212,592, Cl. 417-50.000.

Welge, Frederick T.: *See*—
Redmore, Derek; and Welge, Frederick T., 4,212,734, Cl. 210-58.000.

Weller, Frank C.: *See*—
Simmons, James R.; and Weller, Frank C., 4,212,238, Cl. 100-32.000.

Wells, Arthur D.: *See*—
Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., 4,212,259, Cl. 115-73.000.

Wentzel, William C., to Fuller Company. Apparatus for preheating solid particulate material. 4,212,114, Cl. 34-167.000.

Wermeister, Gunter, to Sandvik Aktiebolag. Mounting element for a reversible tool tip or the like. 4,212,567, Cl. 407-46.000.

Werner, Anton, to Kuhn S.A. Fodder mower-conditioner. 4,212,147, Cl. 56-228,000.

Werner, Wolfgang; and Rittersdorf, Walter, to Boehringer Mannheim GmbH. Rapid diagnostic composition for the determination of uric acid in body fluids. 4,212,844, Cl. 422-56.000.

Wesch, Paul: *See*—
Eisinger, Norbert; Wesch, Paul; and Dzsida, Matthias, 4,212,278, Cl. 123-319.000.

Wesselink, Gustaaf A.: *See*—
Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., 4,213,100, Cl. 331-94.50D.

West, Perry C.; and Buss, Robert R., to Reticon Corporation. Container defect detection apparatus. 4,212,205, Cl. 73-579.000.

West, William F.: *See*—
Correll, Curtis V., Sr.; and West, William F., 4,212,225, Cl. 89-1.50D.

Western Electric Company, Inc.: *See*—
Fuchs, Francis J., Jr., 4,212,177, Cl. 72-41.000.
Piper, George F.; Vesperman, William C.; and Wilson, Max K., 4,212,612, Cl. 425-114.000.

Westinghouse Electric Corp.: *See*—
Buchanan, James E., 4,213,120, Cl. 340-347.0DA.
Emmerich, Werner S., 4,213,022, Cl. 200-148.00R.
Freeman, Willie B., 4,213,020, Cl. 200-81.00R.
Gemp, Robert S., 4,213,191, Cl. 365-73.000.
Keever, Joseph M.; and Lipscomb, George W., 4,213,090, Cl. 324-138.000.

Weston, Terence E.: *See*—
Stelling, David; Barker, David H.; and Weston, Terence E., 4,212,845, Cl. 422-82.000.

Westvaco Corporation: *See*—
Boatwright, William H., 4,212,628, Cl. 432-4.000.

Wetzel, Donald C. Visual warning signal for a locomotive. 4,213,115, Cl. 340-47.000.

Whatman Reeve Angel Limited: *See*—
Perrotta, Kenneth A., 4,213,044, Cl. 250-301.000.

Wheldon, Alfred G.: *See*—
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.

White, Charles A.; and Williams, W. Ronald, to U.S. Industries, Inc. Poultry cages. 4,212,269, Cl. 119-17.000.

White, Glenn E.: *See*—
Shane, Robert K.; and White, Glenn E., 4,212,286, Cl. 126-77.000.

White, William H.: *See*—
Stakun, Vitie J.; and White, William H., 4,212,540, Cl. 356-354.000.

Whyte & Hirschboeck S. C.: *See*—
Suzuki, Koro, 4,213,009, Cl. 179-2.0EA.

Wicki, Heinz: *See*—
Vogel, Claude; and Wicki, Heinz, 4,212,802, Cl. 260-145.00A.

Wiesner, Charles J. Process for preparing insect pheromones. 4,212,830, Cl. 568-486.000.

Wikoff, Mark W., to Walter J. Best Company, The; and Wolf Machine Company, The. Blade guide roller assembly for a band saw. 4,212,104, Cl. 30-380.000.

Wildman, John R.; and Meyer, Burton C. Game apparatus. 4,212,466, Cl. 273-121.00R.

Wiles, Stephen P.: *See*—
Weale, John L.; and Wiles, Stephen P., 4,212,208, Cl. 73-652.000.

Wilhelms, Otto-Henning: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.

Williams, Morgan J., to Coal Industry (Patents) Limited. Bunkering system. 4,212,382, Cl. 198-502.000.

Williams, Ronald S.; and Hill, Robert S., to Arvin Industries. Method of making tube-to-plate connection. 4,212,099, Cl. 29-507.000.

Williams, W. Ronald: *See*—
White, Charles A.; and Williams, W. Ronald, 4,212,269, Cl. 119-17.000.

Willis, Kenneth L. Can crushing device. 4,212,242, Cl. 100-233.000.

Willocks, Jack: *See*—
Cliff, George S.; and Willocks, Jack, 4,212,840, Cl. 264-338.000.

Wilson, David A.; and Schmidt, Roy W., to Dow Chemical Company, The. Process for the preparation of carboxylic acid. 4,212,994, Cl. 562-568.000.

Wilson, Max K.: *See*—
Piper, George F.; Vesperman, William C.; and Wilson, Max K., 4,212,612, Cl. 425-114.000.

Windmoller & Holscher: *See*—
Bosse, Frank; and Lage, Karl-Heinz, 4,212,695, Cl. 156-188.000.

Winkler, Otto, to Oerlikon Buhrle USA Incorporated. Cryopump. 4,212,170, Cl. 62-55.500.

Wintermantel, Klaus: *See*—
Habermann, Wolfgang; Thoma, Peter; and Wintermantel, Klaus, 4,212,725, Cl. 204-290.00F.

Winters, Harry K., to University of California, The Regents of the. Shock shutoff valve. 4,212,313, Cl. 137-39.000.

Wipkink, Johannes, to Ingenieursbureau Marcon (Marine Consultants) B.V. Marine structure connecting structures at different levels. 4,212,561, Cl. 405-195.000.

Wisbrock, Kenneth R. Posthole digging apparatus. 4,212,358, Cl. 173-27.000.

Wise, Layton A., to Mine Safety Appliances Company. Breathing apparatus chemical canister with dust seal. 4,212,846, Cl. 422-122.000.

Wisner, Daniel A.; and Schmalzriedt, Truman T., to Burroughs Corporation. Voltage regulator. 4,213,082, Cl. 323-17.000.

Wissner, Allan, to American Cyanamid Company. 1-Hydroxymethyl-1-oxo-prostane derivatives of the A_2 series. 4,212,969, Cl. 542-429.000.

Wittwer, Arnold: *See*—
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.

Wohlers, Martin R.: *See*—
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

Wolf, Arend. Electric heating device for vehicle windows. 4,213,028, Cl. 219-203.000.

Wolf Machine Company, The: *See*—
Wikoff, Mark W., 4,212,104, Cl. 30-380.000.

Wolf, Ottmar: *See*—
Franke, Walter; and Wolf, Ottmar, 4,212,631, Cl. 432-60.000.

Wolf, Paulus W., to Singer Company, The. Sewing machine treadle with a variable length control linkage. 4,212,255, Cl. 112-217.100.

Wolf, Richard: *See*—
Dreher, Ernst; Wolf, Richard; and Burklin, Max, 4,212,370, Cl. 181-230.000.

Wolf, Tobin. Racing game. 4,212,459, Cl. 273-1.00E.

Wolfelsperger, Robert O.; and Pasco, William R., to American Can Company. Web severing device and process for severing a web. 4,212,213, Cl. 83-56.000.

Wolinski, Leon E.; and Berezuk, Peter D., to Pratt & Lambert, Inc. Non toxic activators for adhesive compositions. 4,212,921, Cl. 428-414.000.

Wood, Don J.: *See*—
Kao, David T.; and Wood, Don J., 4,212,566, Cl. 406-68.000.

Wood, Robert G.: *See*—
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.

Wood, Wilhelm A. H., to Raytheon Company. Poly-phase modulation systems. 4,213,094, Cl. 370-12.000.

Work, William J.: *See*—
Avery, Noyes L.; and Work, William J., 4,212,791, Cl. 260-40.00R.

Woron, Robert P., to Allen Organ Company. Method and apparatus for note attack and decay in an electronic musical instrument. 4,212,221, Cl. 84-1.260.

Wright, Ralph R., to United States of America, Energy. Pre-treatment for molybdenum or molybdenum-rich alloy articles to be plated. 4,212,907, Cl. 427-309.000.

Wrobel, Joseph J.: *See*—
Drexhage, Karl H.; and Wrobel, Joseph J., 4,212,519, Cl. 350-362.000.

Wu, Shy-Hsien, to Corning Glass Works. Method of forming thin thermoplastic elements of complex curvature. 4,212,836, Cl. 264-1.000.

Wulf, Gunther, to Hermann Waldner KG. Shut-off valve. 4,212,448, Cl. 251-184.000.

Wurst, Bert: *See*—
Fresow, Jurgen; and Wurst, Bert, 4,212,280, Cl. 123-611.000.

Xerox Corporation: *See*—
DeBenedictis, Leonard C.; and Starkweather, Gary K., 4,213,157, Cl. 358-293.000.
DeBenedictis, Leonard C., 4,213,158, Cl. 358-296.000.
Guenther, Joachim, 4,212,457, Cl. 271-288.000.

Yachnik, Viktor J.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.

Yagi, Kenkichi: *See*—
Tanaka, Minoru; Yagi, Kenkichi; and Mizuguchi, Shunji, 4,212,916, Cl. 428-290.000.

Yagi, Norio: *See*—
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.

Yahagi, Tateo: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

Yamada, Hiromi: *See*—
Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, 4,212,697, Cl. 427-389.800.

Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Auto-focus camera having rangefinder system. 4,212,523, Cl. 354-25.000.

Yamada, Syozo: *See*—
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.

Yamaguchi, Hachiro, to Wakunaga Yakuhin Kabushiki Kaisha. Process for producing cysteamines and/or cystamines. 4,212,826, Cl. 260-583.0EE.

Yamaguchi, Makoto: *See*—
Satou, Osahiro; Yamaguchi, Makoto; and Hasegawa, Mikio, 4,212,798, Cl. 260-123.500.

Yamaguchi, Testuo: *See*—
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.

Yamamori, Eiji: *See*—
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.

Yamamoto, Megumi, to Bridgestone Tire Company Limited. Wear resistant rubber hose. 4,212,328, Cl. 138-138.000.

Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, to Nitto Boseki Co., Ltd. Process for producing glass fiber-reinforced resin molded sheets. 4,212,697, Cl. 427-389.800.

Yamazaki, Yasuo; and Kimura, Kazuo, to Minolta Camera Kabushiki Kaisha. Viewfinder for single lens reflex camera. 4,212,526, Cl. 354-225.000.

Yamazoe, Hiroshi: *See*—
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,212,838, Cl. 264-25.000.

Yasuhara, Yutaka; Nishino, Masaki; and Matsuhira, Seikichi, to Toray Industries, Inc. Method for producing cyclohexane derivatives directly from aromatic hydrocarbons. 4,212,990, Cl. 560-241.000.

Yasui Sangyo Co., Ltd.: *See*—
Tsujimura, Tozaburo, 4,212,449, Cl. 254-89.00H.

Yazawa, Chihiro: *See*—
Nakayama, Yoshiki; Hirao, Kazushige; and Yazawa, Chihiro, 4,212,831, Cl. 568-17.000.

Yokokoji, Shyoji; and Hoshino, Kazuhisa, to Toppan Printing Co., Ltd. Container bag. 4,212,299, Cl. 128-272.000.

Yoneda, Singo: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

Yoshida, Isao: *See*—
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.

Yoshimoto, Koichi. Roller skate. 4,212,479, Cl. 280-11.280.

Yoshioka, Takao: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

Young, David W.; and Cherry, Donald G. Acidic hydrocarbon-in-water emulsions. 4,212,759, Cl. 252-119.000.

Young, John E. G., to General Signal Corporation. Variable delivery pump control system. 4,212,164, Cl. 60-452.000.

Young, Michael R. System to measure fuel consumption of a vehicle. 4,212,195, Cl. 73-114.000.

Young, Prussin, MGK, J.V., The: *See*—
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,212,897, Cl. 427-2.000.

Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V., The. Adherent controlled release pesticides using organopolysiloxanes. 4,212,897, Cl. 427-2.000.

Yukimasa, Tatsuaki: *See*—
Kawabata, Hideo; and Yukimasa, Tatsuaki, 4,212,476, Cl. 277-134.000.

Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, to Shionogi & Co., Ltd. Process for preparing 3-isoxazolylurea derivatives. 4,212,981, Cl. 548-246.000.

(Zaidanhojin) Sagami Chemical Research Center: *See*—
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,945, Cl. 435-212.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,946, Cl. 435-212.000.

Zaikina, Eleonora I.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Zainulin, Jury G.: *See*—
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Zakow, Gilbert, to Componentry Research & Development Enterprises, Inc. Cable lock for portable property. 4,212,175, Cl. 70-58.000.

Zann, Annie: *See*—
Dubois, Jean-Claude; Nguyen, Huu Tinh; and Zann, Annie, 4,212,762, Cl. 252-299.000.

Zecher, Wilfried: *See*—
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,212,982, Cl. 548-313.000.

Zeigler, Bert A.: *See*—
Zeigler, Michael R.; Zeigler, Robert P.; and Zeigler, Bert A., 4,212,403, Cl. 211-119.000.

Zeigler, Michael R.; Zeigler, Robert P.; and Zeigler, Bert A. Drapery hanger. 4,212,403, Cl. 211-119.000.

Zeigler, Robert P.: *See*—
Zeigler, Michael R.; Zeigler, Robert P.; and Zeigler, Bert A., 4,212,403, Cl. 211-119.000.

Zeilinger, Karl, to Daimler-Benz Aktiengesellschaft. Sound-absorbing covering, especially radiator covering for motor vehicles. 4,212,369, Cl. 181-224.000.

Zenith Radio Corporation: *See*—
Lopez, Hugo A., 4,212,902, Cl. 427-64.000.

Zeunen, Barthel. Photographic exposure apparatus. 4,212,533, Cl. 355-91.000.

Zhemchuzhin, Sergei G.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Zhinkin, Dmitry Y.: *See*—
Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I., 4,212,677, Cl. 106-38.350.

Zhivotchenko, Alexandr D.: *See*—
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Zilges, Franz-Josef: *See*—
Steyvers, Weinfried; and Zilges, Franz-Josef, 4,212,182, Cl. 72-253.00A.

Zirps, Wilhelm, to Robert Bosch GmbH. Hydraulic control arrangement. 4,212,165, Cl. 60-486.000.

Zodrow, Rudolf: *See*—
Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, 4,212,700, Cl. 156-568.000.

Zoino, Hugo A. Conical clutch. 4,212,379, Cl. 192-66.000.

Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I. Steel for atomic reactor vessels. 4,212,668, Cl. 75-125.000.

Zumbahlen, Vincent J. Tiller planter with modified seed bed finishing implement. 4,212,254, Cl. 111-52.000.

Zylstra, Henry J.; and Jansen, Harley W., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,213,165, Cl. 361-94.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Argus Chemical Corporation: *See*—
Kauder, Otto S., Re. 30,338, Cl. 260-23.0XA.

Caterpillar Tractor Co.: *See*—
Gordon, Phillip B., Jr.; and Hunt, Keats E., Re. 30,333, Cl. 60-605.000.

Cincinnati Milacron Inc.: *See*—
Johansson, Oskar R., Re. 30,335, Cl. 425-548.000.

Coles, Carl R., to Zero-Seal, Inc. Pressure compensated hermetically sealed transmission system. Re. 30,334, Cl. 74-18.100.

Connor, David T.; and von Strandtmann, Maximilian, to Warner-Lambert Company. Conversion of acid S, produced by the organism *Polyangium cellulosum* var. *fulvum* into acid F. Re. 30,339, Cl. 542-430.000.

Frank, Robert I.: *See*—
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., Re. 30,336, Cl. 136-89.0PC.

Goodrich, Joel L.: *See*—
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., Re. 30,336, Cl. 136-89.0PC.

Gordon, Phillip B., Jr.; and Hunt, Keats E., to Caterpillar Tractor Co. Ebullient cooled turbocharger bearing housing. Re. 30,333, Cl. 60-605.000.

Hunt, Keats E.: *See*—
Gordon, Phillip B., Jr.; and Hunt, Keats E., Re. 30,333, Cl. 60-605.000.

Johansson, Oskar R., to Cincinnati Milacron Inc. Nozzle shut-off device. Re. 30,335, Cl. 425-548.000.

Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., to Massachusetts Institute of Technology. Solar-cell array. Re. 30,336, Cl. 136-89.0PC.

Kauder, Otto S., to Argus Chemical Corporation. Organotin stabilizer composition containing more than 20 percent tin and resin compositions containing the same. Re. 30,338, Cl. 260-23.0XA.

Loudas, Basil L., to Minnesota Mining and Manufacturing Company. Textile treatment composition. Re. 30,337, Cl. 252-8.750.

Massachusetts Institute of Technology: *See*—
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., Re. 30,336, Cl. 136-89.0PC.

Minnesota Mining and Manufacturing Company: *See*—
Loudas, Basil L., Re. 30,337, Cl. 252-8.750.

von Strandtmann, Maximilian: *See*—
Connor, David T.; and von Strandtmann, Maximilian, Re. 30,339, Cl. 542-430.000.

Wallshein, Melvin. Multi-stranded coiled orthodontic arch wire. Re. 30,332, Cl. 433-20.000.

Warner-Lambert Company: *See*—
Connor, David T.; and von Strandtmann, Maximilian, Re. 30,339, Cl. 542-430.000.

Zero-Seal, Inc.: *See*—
Coles, Carl R., Re. 30,334, Cl. 74-18.100.

LIST OF PLANT PATENTEES

Bailey, Catherine H.; and Hough, L. Fredric, to Stark Brothers Nurseries & Orchards Company. Peach cultivar. 4,572, 7-15-80, Cl. 43.000.

Chakerian, Jonathan P.; and Surabian, Dennis G., to Surabian Brothers. Nectarine tree. 4,570, 7-15-80, Cl. 41.000.

Driscoll Strawberry Associates, Inc.: *See*—
Johnson, Harold A., Jr., 4,573, Cl. 48.000.
Johnson, Harold A., Jr., 4,574, Cl. 48.000.

Hough, L. Fredric: *See*—
Bailey, Catherine H.; and Hough, L. Fredric, 4,572, Cl. 43.000.

Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 4,573, 7-15-80, Cl. 48.000.

Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 4,574, 7-15-80, Cl. 48.000.

Krieger, Larry A., to Stark Brothers Nurseries & Orchards Company. Rhubarb plant - K-1 variety. 4,575, 7-15-80, Cl. 89.000.

Stark Brothers Nurseries & Orchards Company: *See*—
Bailey, Catherine H.; and Hough, L. Fredric, 4,572, Cl. 43.000.
Krieger, Larry A., 4,575, Cl. 89.000.

Surabian Brothers: *See*—
Chakerian, Jonathan P.; and Surabian, Dennis G., 4,570, Cl. 41.000.

Surabian, Dennis G.: *See*—
Chakerian, Jonathan P.; and Surabian, Dennis G., 4,570, Cl. 41.000.

Zaiger, Chris F. Peach tree. 4,571, 7-15-80, Cl. 43.000.

LIST OF DESIGN PATENTEES

A.P.T. Electronics Limited: *See*—
Price, Peter J., 255,879, Cl. D10-65.000.

Abbott Laboratories: *See*—
Chittenden, Richard M., 255,934, Cl. D24-54.000.

Airwick Industries, Inc.: *See*—
Hoyt, Earl, 255,928, Cl. D23-150.000.

American Hospital Supply Corporation: *See*—
Nilles, John D.; and Stankiewicz, Stanley L., 255,930, Cl. D24-12.000.

American Safety Razor Company: *See*—
Iten, Clemens A., 255,867, Cl. D8-98.000.

Ammondson, Clayton J.: *See*—
Hartman, Robert G.; and Ammondson, Clayton J., 255,865, Cl. D7-194.000.

Andrews, Donna M. Plastic pierced earring or similar article. 255,885, 7-15-80, Cl. D11-43.000.

Antonell, Frank R. Sprinkler head. 255,920, 7-15-80, Cl. D23-34.000.

Applegate, Leslie T., to Surgical Appliance Industries, Inc. Leg exerciser. 255,915, 7-15-80, Cl. D21-191.000.

Ashton, Harold P., to Dart Industries Inc. Cup or the like. 255,858, 7-15-80, Cl. D7-9.000.

Astrosystems, Inc.: *See*—
Barth, Seymour, 255,896, Cl. D13-99.000.

Atienza, Alexander C. Retractable measuring tape with finger guard. 255,881, 7-15-80, Cl. D10-72.000.

Atkins, Harry D. Loose-fill packing element. 255,875, 7-15-80, Cl. D9-294.000.

Austin, George K., Jr. Improved dental handpiece. 255,929, 7-15-80, Cl. D24-10.000.

Barth, Seymour, to Astrosystems, Inc. Electromagnetic transducer. 255,896, 7-15-80, Cl. D13-99.000.

Baxter Travenol Laboratories, Inc.: *See*—
Cullis, Herbert M.; and Brown, Richard I., 255,935, Cl. D24-58.000.
Cullis, Herbert M.; and Brown, Richard I., 255,936, Cl. D24-58.000.
Shine, Dennis F.; and Torau, Gunther W., 255,872, Cl. D9-169.000.

Beale, Allan A.; and LaVance, Cecil, to Motorola, Inc. Course error and distance indicator or similar article. 255,880, 7-15-80, Cl. D10-67.000.

Bennett, Burton K. Air-operated cleaner. 255,864, 7-15-80, Cl. D7-164.000.

Bergman, Michael D. Multi-level chessboard. 255,910, 7-15-80, Cl. D21-23.000.

Berkowitz, Irving L.; and Bourgeois, John J., to Kason Industries, Inc. Hinge design. 255,868, 7-15-80, Cl. D8-323.000.

Bick, Michael A., to Shelly & Anderson Furniture Mfg. Co., Inc. Chair. 255,846, 7-15-80, Cl. D6-71.000.

Bidwell, Robert E.: *See*—
Kurtz, Leonard D.; and Bidwell, Robert E., 255,937, Cl. D24-59.000.

Bourgeois, John J.: *See—*
Berkowitz, Irving L.; and Bourgeois, John J., 255,868, Cl. D8-323.000.

Braun Aktiengesellschaft: *See—*
Lubs, Dietrich, 255,876, Cl. D10-26.000.

Brown, Richard I.: *See—*
Cullis, Herbert M.; and Brown, Richard I., 255,935, Cl. D24-58.000.
Cullis, Herbert M.; and Brown, Richard I., 255,936, Cl. D24-58.000.

Bunger, Richard E.; and Hancock, Roy J., to Corral Industries, Inc. Interlocking flume platform panel for animal confinement pens. 255,947, 7-15-80, Cl. D30-2.000.

Cable, H. Edward, to Weld Tooling Corporation. Guide rail. 255,903, 7-15-80, Cl. D15-139.000.

Chapman, Milo G.; and Christie, David E., to Dura-Craft, Inc. Dollhouse. 255,912, 7-15-80, Cl. D21-114.000.

Chittenden, Richard M., to Abbott Laboratories. Unidirectional catheter placement unit, or the like. 255,934, 7-15-80, Cl. D24-54.000.

Christie, David E.: *See—*
Chapman, Milo G.; and Christie, David E., 255,912, Cl. D21-114.000.

Clairol Incorporated: *See—*
MacGregor, Francis W., 255,945, Cl. D28-67.000.

Corral Industries, Inc.: *See—*
Bunger, Richard E.; and Hancock, Roy J., 255,947, Cl. D30-2.000.

Crane, Roy B., to Keene Corporation. Lighted display fixture. 255,851, 7-15-80, Cl. D6-113.000.

Crofton, James R. Fishing bobber. 255,919, 7-15-80, Cl. D22-30.000.

Cullis, Herbert M.; and Brown, Richard I., to Baxter Travenol Laboratories, Inc. Blood processing container. 255,935, 7-15-80, Cl. D24-58.000.

Cullis, Herbert M.; and Brown, Richard I., to Baxter Travenol Laboratories, Inc. Blood processing container. 255,936, 7-15-80, Cl. D24-58.000.

Dart Industries Inc.: *See—*
Ashton, Harold P., 255,858, Cl. D7-9.000.

Day, Patricia A. Crushable hat. 255,840, 7-15-80, Cl. D2-257.000.

DeStepheno, George E.: *See—*
Kwan, Gerald A.; and DeStepheno, George E., 255,940, Cl. D25-74.000.

D'Innocente, Ralph; and Jacuzzi, Roy A., to Jacuzzi Whirlpool Bath, Inc. Hydromassage tub. 255,932, 7-15-80, Cl. D24-36.000.

Dixson, Tommy W. Accessory console for motorcycles. 255,894, 7-15-80, Cl. D12-114.000.

Doman, Donald W., to Kohler Co. Wall spout. 255,921, 7-15-80, Cl. D23-32.000.

Dura-Craft, Inc.: *See—*
Chapman, Milo G.; and Christie, David E., 255,912, Cl. D21-114.000.

East Hampton Industries, Inc.: *See—*
Ferrin, Kenneth, 255,862, Cl. D7-66.000.

Eaton Corporation: *See—*
Hawke, David; and Kirkwood, Janet M., 255,938, Cl. D24-99.000.

Emanuel, Peter R., to International Telephone & Telegraph Corporation. Plastic storm door. 255,939, 7-15-80, Cl. D25-48.000.

Fehlberg, John. Batten pocket protector. 255,892, 7-15-80, Cl. D12-70.000.

Ferenc, Robert A., to Whelen Engineering Company, Inc. Lens for warning light. 255,883, 7-15-80, Cl. D10-121.000.

Ferrin, Kenneth, to East Hampton Industries, Inc. Cup. 255,862, 7-15-80, Cl. D7-66.000.

Florists' Transworld Delivery Association: *See—*
Waterfield, Martin J., 255,887, Cl. D11-146.000.
Waterfield, Martin J., 255,888, Cl. D11-152.000.
Waterfield, Martin J., 255,889, Cl. D11-152.000.

Flynn, Richard. Holder for tabular containers of plant growth medium. 255,886, 7-15-80, Cl. D11-156.000.

Fogarty, Wilfred J. Dispenser for tea bags and the like. 255,852, 7-15-80, Cl. D6-130.000.

Fritz, Lawrence E. Snowmobile ski. 255,893, 7-15-80, Cl. D12-7.000.

Fujimoto, Kazumi; and Hotani, Yoshiko, to Sony Corporation. Packing box. 255,874, 7-15-80, Cl. D9-224.000.

Futch, Ben F. Transportable outdoor barbecue grill. 255,863, 7-15-80, Cl. D7-108.000.

Galbreath, Donald J. Wildlife habitat or similar article. 255,946, 7-15-80, Cl. D30-1.000.

Game Time, Inc.: *See—*
Lofton, Steven A.; and Mulligan, David C., 255,913, Cl. D21-250.000.
Lofton, Steven A.; and Mulligan, David C., 255,916, Cl. D21-247.000.

Gay, Annette J., to Lijewski, Josephine C., a part interest. Swirl pillow. 255,854, 7-15-80, Cl. D6-201.000.

Genc, Robert R.: *See—*
Soika, Emil H.; and Genc, Robert R., 255,905, Cl. D17-14.000.

Genc, Robert Russell: *See—*
Soika, Emil H.; and Genc, Robert R., 255,905, Cl. D17-14.000.

General Electric Company: *See—*
Yamagata, Fuminori, 255,897, Cl. D14-12.000.

Gibbons, Robert R.: *See—*
Halls, Kenneth F.; Gibbons, Robert R.; and Miller, D. Harrison, 255,951, Cl. D30-99.000.

Gibbs, Beverly K., executrix: *See—*
Gibbs, Patrick L., deceased; and Gibbs, Beverly K., executrix, 255,891, Cl. D12-62.000.

Gibbs, Patrick L., deceased; and Gibbs, Beverly K., executrix. Boat. 255,891, 7-15-80, Cl. D12-62.000.

Glogovcsan, Rudolf A. Picture frame. 255,855, 7-15-80, Cl. D6-235.000.

Glynn, John H.; and Glynn, Patrick J. Roofing safety bracket. 255,869, 7-15-80, Cl. D8-356.000.

Glynn, Patrick J.: *See—*
Glynn, John H.; and Glynn, Patrick J., 255,869, Cl. D8-356.000.

Goldman, Paul R. Shoe bottom. 255,841, 7-15-80, Cl. D2-322.000.

Goldman, Paul R. Shoe bottom. 255,842, 7-15-80, Cl. D2-322.000.

Goldman, Paul R. Shoe bottom. 255,843, 7-15-80, Cl. D2-322.000.

Grant, Darwin D. Portable gallery lamp. 255,941, 7-15-80, Cl. D26-76.000.

Grethey, Albert K.: *See—*
Moore, Walter E.; and Grethey, Albert K., 255,907, Cl. D20-4.000.
Moore, Walter E.; and Grethey, Albert K., 255,908, Cl. D20-4.000.

Halls, Kenneth F.; Gibbons, Robert R.; and Miller, D. Harrison, to Miller, D. Harrison. Solids separation scoop for use in cleaning pet litter. 255,951, 7-15-80, Cl. D30-99.000.

Hancock, Roy J.: *See—*
Bunger, Richard E.; and Hancock, Roy J., 255,947, Cl. D30-2.000.

Hartman, Robert G.; and Ammondson, Clayton J., to Zarn, Inc. Trash can cover. 255,865, 7-15-80, Cl. D7-194.000.

Haselrig, William E., to Transwestern Sales, Inc. Combined comb and spray atomizer. 255,944, 7-15-80, Cl. D28-25.000.

Hashimoto, Minoru: *See—*
Inoue, Chuichi; and Hashimoto, Minoru, 255,902, Cl. D14-79.000.

Hawke, David; and Kirkwood, Janet M., to Eaton Corporation. Transducer holder. 255,938, 7-15-80, Cl. D24-99.000.

Hernandez, Eugene. Scoop with cleaning slots for smoking tobacco and the like. 255,943, 7-15-80, Cl. D27-51.000.

Higson, James E. Picture frame or the like. 255,856, 7-15-80, Cl. D6-242.000.

Hogreff, William E. Fish lure. 255,918, 7-15-80, Cl. D22-27.000.

Hotani, Yoshiko: *See—*
Fujimoto, Kazumi; and Hotani, Yoshiko, 255,874, Cl. D9-224.000.

Howmedica Inc.: *See—*
Kurtz, Leonard D.; and Bidwell, Robert E., 255,937, Cl. D24-59.000.

Hoyt, Earl, to Airwick Industries, Inc. Dispenser for air treating material. 255,928, 7-15-80, Cl. D23-150.000.

Hsu, Junior C. S. Cheese grater. 255,861, 7-15-80, Cl. D7-47.000.

Hustrei, Al W. Gasoline can. 255,873, 7-15-80, Cl. D9-175.000.

Igo, Toshio: *See—*
Ohta, Kikuo; Igo, Toshio; and Usami, Satoru, 255,900, Cl. D14-68.000.

Inoue, Chuichi; and Hashimoto, Minoru, to Matsushita Electric Industrial Co., Ltd. Projection television receiver. 255,902, 7-15-80, Cl. D14-79.000.

International Telephone & Telegraph Corporation: *See—*
Emanuel, Peter R., 255,939, Cl. D25-48.000.

Iten, Clemens A., to American Safety Razor Company. Razor knife with frangible sheath. 255,867, 7-15-80, Cl. D8-98.000.

Jacuzzi, Roy A.: *See—*
D'Innocente, Ralph; and Jacuzzi, Roy A., 255,932, Cl. D24-36.000.

Jacuzzi Whirlpool Bath, Inc.: *See—*
D'Innocente, Ralph; and Jacuzzi, Roy A., 255,932, Cl. D24-36.000.

JMJ Electronics Corp.: *See—*
Mitchell, Phillip H., 255,895, Cl. D13-11.000.

Kabushiki Kaisha Otani: *See—*
Otani, Katsuhiko, 255,844, Cl. D2-415.000.

Karas, Joseph W.; Pfeifer, Robert F.; and Samson, Robert, to Motorola, Inc. Code entry terminal for security access system. 255,899, 7-15-80, Cl. D14-42.000.

Karp, Morry. Pipe stand. 255,942, 7-15-80, Cl. D27-02.000.

Kason Industries, Inc.: *See—*
Berkowitz, Irving L.; and Bourgeois, John J., 255,868, Cl. D8-323.000.

Keene Corporation: *See—*
Crane, Roy B., 255,851, Cl. D6-113.000.

Kim, Kil. Alarm and page signal transmitter. 255,882, 7-15-80, Cl. D10-121.000.

Kirkwood, Janet M.: *See—*
Hawke, David; and Kirkwood, Janet M., 255,938, Cl. D24-99.000.

Kohler Co.: *See—*
Doman, Donald W., 255,921, Cl. D23-32.000.

Kupperman, Dennis: *See—*
Kupperman, Sam; and Kupperman, Dennis, 255,906, Cl. D19-23.000.

Kupperman, Sam; and Kupperman, Dennis, to RB Toy Development Co. Combined perpetual calender and writing instrument holder. 255,906, 7-15-80, Cl. D19-23.000.

Kurtz, Leonard D.; and Bidwell, Robert E., to Howmedica Inc. Pleural cavity drainage container. 255,937, 7-15-80, Cl. D24-59.000.

Kwan, Gerald A.; and DeStepheno, George E., to Le Van Specialty Co., Inc. Frame extrusion molding. 255,940, 7-15-80, Cl. D25-74.000.

LaVance, Cecil: *See—*
Beale, Allan A.; and LaVance, Cecil, 255,880, Cl. D10-67.000.

Le Van Specialty Co., Inc.: *See—*
Kwan, Gerald A.; and DeStepheno, George E., 255,940, Cl. D25-74.000.

Lennox, Alan F.: *See—*
O'Donovan, Michael; and Lennox, Alan F., 255,870, Cl. D9-2.000.
O'Donovan, Michael; and Lennox, Alan F., 255,871, Cl. D9-2.000.

Lijewski, Josephine C.: *See—*
Gay, Annette J., 255,854, Cl. D6-201.000.

Link, Harold J. Portable air bubble mat. 255,933, 7-15-80, Cl. D24-38.000.

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Inoue, Chuichi; and Hashimoto, Minoru, 255,902, Cl. D14-79.000.
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Merrill, Rex R. Pistol. 255,917, 7-15-80, Cl. D22-1.000.
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Motorola, Inc.: *See—*
Beale, Allan A.; and LaVance, Cecil, 255,880, Cl. D10-67.000.
Karas, Joseph W.; Pfeifer, Robert F.; and Samson, Robert, 255,899, Cl. D14-42.000.
Tokiyama, Masaru, 255,901, Cl. D14-68.000.
Mulligan, David C.: *See—*
Lofton, Steven A.; and Mulligan, David C., 255,913, Cl. D21-250.000.
Lofton, Steven A.; and Mulligan, David C., 255,916, Cl. D21-247.000.
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Samuels, Allen J., 255,859, Cl. D7-28.000.
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Panos, Mihail. Bottle opener. 255,866, 7-15-80, Cl. D8-38.000.
Pfeifer, Robert F.: *See—*
Karas, Joseph W.; Pfeifer, Robert F.; and Samson, Robert, 255,899, Cl. D14-42.000.
Price, Marilyn E.: *See—*
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Kupperman, Sam; and Kupperman, Dennis, 255,906, Cl. D19-23.000.
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Robert, Tony. Aquarium or similar article. 255,950, 7-15-80, Cl. D30-8.000.
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Rosenkranz, Alan F., to United Utensils Company, Inc. Sink. 255,924, 7-15-80, Cl. D23-61.000.
Samson, Robert: *See—*
Karas, Joseph W.; Pfeifer, Robert F.; and Samson, Robert, 255,899, Cl. D14-42.000.
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Yamagami, Masafumi, 255,877, Cl. D10-30.000.
Shelly & Anderson Furniture Mfg. Co., Inc.: *See—*
Bick, Michael A., 255,846, Cl. D6-71.000.
Shine, Dennis F.; and Torau, Gunther W., to Baxter Travenol Laboratories, Inc. Bottle. 255,872, 7-15-80, Cl. D9-169.000.
Shure Brothers, Inc.: *See—*
Thomsen, James P.; and Thielmann, Ronald G., 255,898, Cl. D14-28.000.
Smith, Melbourne F., Jr. Bed headboard. 255,847, 7-15-80, Cl. D6-79.000.
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Soika, Emil Henry: *See—*
Soika, Emil H.; and Genc, Robert R., 255,905, Cl. D17-14.000.
Sony Corporation: *See—*
Fujimoto, Kazumi; and Hotani, Yoshiko, 255,874, Cl. D9-224.000.
Stankiewicz, Stanley L.: *See—*
Nilles, John D.; and Stankiewicz, Stanley L., 255,930, Cl. D24-12.000.
Starniri, Rocco J. Figurine with blinking eye. 255,914, 7-15-80, Cl. D21-168.000.
Surgical Appliance Industries, Inc.: *See—*
Applegate, Leslie T., 255,915, Cl. D21-191.000.
Taylor Woodcraft: *See—*
Tome, Philip L., 255,853, Cl. D6-179.000.
Teeri, Niilo H. Fireplace. 255,926, 7-15-80, Cl. D23-97.000.
Theodore, Michael G. Toy airplane. 255,911, 7-15-80, Cl. D21-90.000.
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Therrien, Gilles. Piano keyboard level adjusting bar. 255,904, 7-15-80, Cl. D17-9.000.
Thielmann, Ronald G.: *See—*
Thomsen, James P.; and Thielmann, Ronald G., 255,898, Cl. D14-28.000.
Thomsen, James P.; and Thielmann, Ronald G., to Shure Brothers, Inc. Phonograph stylus. 255,898, 7-15-80, Cl. D14-28.000.
Timberline, Inc.: *See—*
Wilkes, Ted W., Jr.; and Wentworth, Darel L., 255,890, Cl. D12-57.000.
Tokiyama, Masaru, to Motorola, Inc. Vehicular radio housing or similar article. 255,901, 7-15-80, Cl. D14-68.000.
Tome, Philip L., to Taylor Woodcraft. Food processing table. 255,853, 7-15-80, Cl. D6-179.000.
Torau, Gunther W.: *See—*
Shine, Dennis F.; and Torau, Gunther W., 255,872, Cl. D9-169.000.
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Haselrig, William E., 255,944, Cl. D28-25.000.
Trapp, Charitee B. Bracelet. 255,884, 7-15-80, Cl. D11-6.000.
UMC Industries, Inc.: *See—*
Moore, Walter E.; and Grethey, Albert K., 255,907, Cl. D20-4.000.
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United Utensils Company, Inc.: *See—*
Rosenkranz, Alan F., 255,923, Cl. D23-58.000.
Rosenkranz, Alan F., 255,924, Cl. D23-61.000.
Usami, Satoru: *See—*
Ohta, Kikuo; Igo, Toshio; and Usami, Satoru, 255,900, Cl. D14-68.000.
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Weld Tooling Corporation: *See—*
Cable, H. Edward, 255,903, Cl. D15-139.000.
Wentworth, Darel L.: *See—*
Wilkes, Ted W., Jr.; and Wentworth, Darel L., 255,890, Cl. D12-57.000.
Whelen Engineering Company, Inc.: *See—*
Ferenc, Robert A., 255,883, Cl. D10-121.000.
Wilkes, Ted W., Jr.; and Wentworth, Darel L., to Timberline, Inc. Underground crane. 255,890, 7-15-80, Cl. D12-57.000.
Wood, Edward A. Pistol grip brush. 255,845, 7-15-80, Cl. D4-38.000.
Wurttenbergische Metallwaren Fabrik: *See—*
Zimmermann, Joerg, 255,857, Cl. D7-1.000.
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Hartman, Robert G.; and Ammondson, Clayton J., 255,865, Cl. D7-194.000.
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 3

1.2 4,212,087

CLASS 4

228 4,212,089
490 4,212,088

CLASS 5

14 4,212,090

CLASS 8

115.5 4,212,649
406 4,212,645
466 4,212,648
470 4,212,642
4,212,643
506 4,212,644
532 4,212,646
662 4,212,647

CLASS 13

6 4,213,002

CLASS 15

250 B 4,212,091

CLASS 16

35 D 4,212,093
35 R 4,212,092

CLASS 23

230 B 4,212,650

CLASS 24

31 B 4,212,094
73 R 4,212,251

CLASS 29

148.4 C 4,212,095
235 4,212,096
450 4,212,097
460 4,212,098
507 4,212,099
571 4,212,100
622 4,212,101
741 4,212,102

CLASS 30

32 4,212,103
380 4,212,104

CLASS 33

172 D 4,212,106
174 A 4,212,107
174 G 4,212,108
4,212,110
181 R 4,212,111
241 4,212,109

CLASS 34

9 4,212,112
156 4,212,113
167 4,212,114
215 4,212,115

CLASS 35

29 R 4,212,116
31 C 4,212,117
4,212,118
35 C 4,212,119

CLASS 36

129 4,212,120

CLASS 37

58 4,212,121

CLASS 40

152.1 4,212,122
4,212,123
155 4,212,124

CLASS 43

16 4,212,125
24 4,212,126
43.12 4,212,127
81 4,212,128
113 4,212,129

CLASS 44

1 SR 4,212,651

CLASS 46

12 4,212,130
74 D 4,212,131
118 4,212,132

CLASS 47

41 R 4,212,133
82 4,212,134

CLASS 48

89 4,212,652

CLASS 51

165.71 4,212,135
204 4,212,136
206.4 4,212,137
427 4,212,138

CLASS 52

721 4,212,139

CLASS 53

289 4,212,140

CLASS 55

1 4,212,653
91 4,212,654
181 4,212,655
217 4,212,656
319 4,212,657
347 4,212,658
385 B 4,212,659

CLASS 56

11.8 4,212,141
14.4 4,212,142
4,212,143
15.8 4,212,144
27.5 4,212,145
98 4,212,146
228 4,212,147
328 R 4,212,148
341 4,212,149
400.06 4,212,150

CLASS 57

9 4,212,151
207 4,212,152

CLASS 60

39.12 4,212,160
39.28 R 4,212,161
39.63 4,212,162
4,212,163
452 4,212,164
486 4,212,165
582 4,212,166
594 4,212,167
605 Re.30,333
661 4,212,168

CLASS 62

45 4,212,169
55.5 4,212,170
63 4,212,171
305 4,212,172

CLASS 65

3 A 4,212,660
18 4,212,661
106 4,212,662
144 4,212,663

CLASS 66

9 R 4,212,174

CLASS 70

58 4,212,175
417 4,212,176

CLASS 71

94 4,212,664

CLASS 72

41 4,212,177
97 4,212,178
148 4,212,179
249 4,212,180
250 4,212,181
253 A 4,212,182
318 4,212,183
340 4,212,184
354 4,212,185
393 4,212,186
4,212,187
413 4,212,188
478 4,212,189

CLASS 73

28 4,212,190
45.5 4,212,192
65 4,212,193
73 4,212,194
114 4,212,195
136 R 4,212,196
141 A 4,212,197
151 4,212,198
290 V 4,212,201
304 C 4,212,202
425.4 R 4,212,203
425.6 4,212,204
579 4,212,205
606 4,212,206
623 4,212,207
652 4,212,208
721 4,212,209
861.47 4,212,191
4,212,200
861.66 4,212,199

CLASS 74

18.1 Re.30,334
375 4,212,210
538 4,212,211

CLASS 75

10 V 4,212,665
85 4,212,666
86 4,212,667
125 4,212,668
226 4,212,669
233 4,212,670
238 4,212,671

CLASS 81

57.17 4,212,212

CLASS 83

56 4,212,213
102.1 4,212,214
109 4,212,215
165 4,212,216
277 4,212,217
479 4,212,218

CLASS 84

1.06 4,212,219
1.14 4,212,220
1.26 4,212,221
278 4,212,222
383 R 4,212,223

CLASS 85

1 K 4,212,224

CLASS 89

1.5 D 4,212,225
41 L 4,212,226
129 B 4,212,227

CLASS 91

170 4,212,228
446 4,212,229

CLASS 92

58 4,212,230

CLASS 93

1 F 4,212,231
49 M 4,212,232

CLASS 98

108 4,212,233

CLASS 99

426 4,212,234
441 4,212,235
467 4,212,236
589 4,212,237

CLASS 100

32 4,212,238
37 4,212,239
53 4,212,240
116 4,212,241
233 4,212,242

CLASS 101

4 4,212,243

CLASS 102

38 MM 4,212,244
249 4,212,245
270 4,212,246

CLASS 104

124 4,212,247
138 G 4,212,248
281 4,212,249

CLASS 105

50 4,212,250
406 R 4,212,252

CLASS 106

14.05 4,212,674
18.15 4,212,675
19 4,212,676
38.35 4,212,677
39.7 4,212,678
57 4,212,679
65 4,212,680
89 4,212,681
288 B 4,212,682

CLASS 110

182.5 4,212,253

CLASS 111

52 4,212,254

CLASS 112

217.1 4,212,255
240 4,212,256
278 4,212,257

CLASS 114

312 4,212,258

CLASS 115

73 4,212,259

CLASS 116

28 R 4,212,260
224 4,212,261
307 4,212,262

CLASS 118

37 4,212,263
653 4,212,264
700 4,212,265
712 4,212,266

CLASS 119

1 4,212,267
2 4,212,268
17 4,212,269

CLASS 123

41.09 4,212,270
43 B 4,212,271
193 H 4,212,281
204 4,212,282
210 4,212,283
319 4,212,278
339 4,212,272
343 4,212,277
352 4,212,279
438 4,212,273
516 4,212,276
548 4,212,274
549 4,212,275
611 4,212,280

CLASS 124

56 4,212,284
67 4,212,285

CLASS 126

77 4,212,286
419 4,212,287
428 4,212,288
4,212,289
438 4,212,290
445 4,212,291
449 4,212,292
450 4,212,293

CLASS 128

92 BC 4,212,294
138 A 4,212,295
156 4,212,296
207.14 4,212,297
215 4,212,298
272 4,212,299
276 4,212,300
285 4,212,301
287 4,212,302
346 4,212,303
349 R 4,212,304
354 4,212,305
665 4,212,306
763 4,212,307
766 4,212,308
4,212,309

CLASS 131

17 R 4,212,310

CLASS 132

31 A 4,212,311

CLASS 136

89 PC Re.30,336

CLASS 137

13 4,212,312
39 4,212,313
216.2 4,212,314
377 4,212,315
543.17 4,212,316
565 4,212,317
590 4,212,318
614.2 4,212,319
625.32 4,212,321
625.48 4,212,322
625.6 4,212,320
625.61 4,212,323
625.66 4,212,324
627.5 4,212,325

CLASS 138

40 4,212,326
125 4,212,327
138 4,212,328
155 4,212,329

CLASS 139

435 4,212,330

CLASS 141

67 4,212,331
98 4,212,332
4,212,333
197 4,212,334
382 4,212,335

CLASS 145

61 L 4,212,336

CLASS 148

1.5 4,212,683
4,212,684
6.1 4,212,685
11.5 F 4,212,686
16.6 4,212,687
31.55 4,212,688
111 4,212,689
131 4,212,690

CLASS 150

3 4,212,337

CLASS 152

158 4,212,338
4,212,339
355 4,212,340

CLASS 156

79 4,212,691
167 4,212,692
173 4,212,693
184 4,212,694
188 4,212,695
294 4,212,696
378 4,212,698
558 4,212,699
568 4,212,700
665 4,212,701

CLASS 160

84 R 4,212,341

CLASS 162

36 4,212,702
129 4,212,703
175 4,212,704
238 4,212,705

CLASS 164

4 4,212,342
64 4,212,343
87 4,212,344
149 4,212,345

CLASS 165

32 4,212,346
46 4,212,347
49 4,212,348
105 4,212,349
129 4,212,350
160 4,212,351

CLASS 166

206 4,212,352
303 4,212,353
4,212,354
336 4,212,355

CLASS 168

18 4,212,356

CLASS 172

22 4,212,357

CLASS 173

27 4,212,358

CLASS 174

88 B 4,213,003
151 4,213,004

CLASS 175

26 4,212,359

CLASS 177

139 4,212,360
200 4,212,361

CLASS 178

18 4,213,005

CLASS 179

1 E 4,213,008
2 EA 4,213,009
6 E 4,213,010
84 R 4,213,012
98 4,213,013
170.2 4,213,014
175.2 C 4,213,015
175.3 R 4,213,016

CLASS 180

6.48 4,212,362
19 H 4,212,363
19 R 4,212,364
139 4,212,365
141 4,212,366
271 4,212,367

CLASS 181

131 4,212,368
224 4,212,369
230 4,212,370

CLASS 182

121 4,212,371

CLASS 184

15 B 4,212,372
56 A 4,212,373

CLASS 187

8.43 4,212,374
9 R 4,212,375

CLASS 188

218 XL 4,212,376

CLASS 190

52 4,212,377

CLASS 191

62 4,212,378

CLASS 192

66 4,212,379
106.2 4,212,380

CLASS 193

40 4,212,381

CLASS 198

502 4,212,382
616 4,212,383
684 4,212,384
781 4,212,385

CLASS 200

5 B 4,213,017
51.12 4,213,018
61.13 4,213,019
81 R 4,213,020
81.9 M 4,213,021
148 R 4,213,022

CLASS 201

39 4,212,706

CLASS 204

26 4,212,707
46 G 4,212,708
49 4,212,709
78 4,212,710
4,212,711
98 4,212,712
4,212,713
4,212,714
99 4,212,715
157.1 R 4,212,716
158 R 4,212,717
159.23 4,212,718
165 4,212,719
195 S 4,212,720
219 4,212,721
222 4,212,722
272 4,212,723
273 4,212,724
290 F 4,212,725

CLASS 206

37 4,212,386
223 4,212,387
230 4,212,388
316 4,212,389
339 4,212,390
434 4,212,391
571 4,212,392
575 4,212,393
586 4,212,394
611 4,212,395
629 4,212,396

CLASS 208

101 4,212,726
111 4,212,727
121 4,212,728
210 4,212,729

CLASS 209

168 4,212,730
366.5 4,212,731
589 4,212,397
590 4,212,398

CLASS 210

32 4,212,732
36 4,212,733
58 4,212,734
63 R 4,212,735
73 R 4,212,736
77 4,212,737
94 4,212,738
130 4,212,739
169 4,212,740
241 4,212,741
247 4,212,742
282 4,212,743
321 B 4,212,744
401 4,212,745
495 4,212,746

CLASS 211

35 4,212,399
41 4,212,400
81 4,212,401
105.3 4,212,402
119 4,212,403

CLASS 212

238 4,212,404

CLASS 219

10.55 B 4,213,023
61 4,213,024
73.2 4,213,025
75 4,213,026
4,213,027
203 4,213,028
209 4,213,029
216 4,213,030
244 4,213,031
364 4,213,032
385 4,213,033
535 4,213,034

CLASS 220

1.5 4,212,405
4,212,406
88 R 4,212,407
254 4,212,408
276 4,212,409
324 4,212,410
347 4,212,411

CLASS 221

81 4,212,412

CLASS 222

1 4,212,413
148 4,212,414
231 4,212,415
267 4,212,416

CLASS 224

42.21 4,212,417
206 4,212,418

CLASS 226

23 4,212,419
118 4,212,420
127 4,212,421
196 4,212,422

CLASS 228

136 4,212,423

CLASS 235

92 B 4,213,037
92 DN 4,213,035
92 PC 4,213,036
382 4,213,038
449 4,213,039
476 4,213,040
487 4,213,041

CLASS 236

93 R 4,212,424

CLASS 239

133 4,212,425
230 4,212,426
676 4,212,427
677 4,212,428

CLASS 241

26 4,212,429
89.4 4,212,430
100 4,212,431
285 B 4,212,432

CLASS 242

35.5 A 4,212,433
55.2 4,212,434
107 4,212,435
192 4,212,436
199 4,212,437
201 4,212,438
206 4,212,439

CLASS 244

1 R 4,212,440
46 4,212,441
110 B 4,212,442
177 4,212,443
182 4,212,444

CLASS 248

245 4,212,445
678 4,212,446

CLASS 250

223 B 4,213,042
283 4,213,043
301 4,213,044
370 4,213,045
381 4,213,046
4,213,047
402 4,213,048
408 4,213,049
445 T 4,213,050
457 4,213,051
462 4,213,052
483 4,213,055
492 A 4,213,053
505 4,213,054
559 4,213,056

CLASS 251

98 4,212,447
184 4,212,448

CLASS 252

8.55 D 4,212,748
8.55 R 4,212,747
8.75 Re.30,337
4,212,749
32.5 4,212,750
32.7 E 4,212,751
42.7 4,212,752
46.6 4,212,753
49.7 4,212,754
62 4,212,755
63.2 4,212,756
95 4,212,757
119 4,212,758
4,212,759
156 4,212,760
174.12 4,212,761
299 4,212,762
301.23 4,212,763
392 4,212,764
430 4,212,765
432 4,212,766
435 4,212,767
441 4,212,768
4,212,769
4,212,770
455 Z 4,212,771
476 4,212,772
522 R 4,212,773

CLASS 254

89 H 4,212,449
108 4,212,450

CLASS 260

2.3 4,212,774
17.2 4,212,775
18 EP 4,212,776
18 N 4,212,777
22 A 4,212,778
22 CQ 4,212,779
23 XA Re.30,338
27 BB 4,212,780
29.4 DA 4,212,781
29.6 H 4,212,783
29.6 HN 4,212,782
29.6 WQ 4,212,784
29.7 H 4,212,785
31.2 R 4,212,786
33.6 AQ 4,212,787
4,212,789
33.6 UA 4,212,788
40 R 4,212,790
4,212,791
42.18 4,212,792
45.85 T 4,212,793
97.6 4,212,794
112.5 R 4,212,796
4,212,797
112.5 T 4,212,795
123.5 4,212,798
4,212,799
123.7 4,212,800
145 A 4,212,801
4,212,802
154 4,212,803
325 R 4,212,804
326 N 4,212,805
326.2 4,212,806
326.31 4,212,807
340.3 4,212,808
340.5 R 4,212,809
4,212,810
343.3 P 4,212,811
345.1 4,212,812
346.4 4,212,813
347.8 4,212,814
397.2 4,212,815
410.6 4,212,816
449 M 4,212,817
465.4 4,212,818
543 R 4,212,819
561 N 4,212,820
570 D 4,212,821
570.9 4,212,822
571 4,212,823
580 4,212,824
583 EE 4,212,826
930 4,212,832

CLASS 261

23 A 4,212,833
44 A 4,212,834
116 4,212,835

CLASS 264

1 4,212,836
15 4,212,837
25 4,212,838
45.3 4,212,839
338 4,212,840
530 4,212,841

CLASS 266

50 4,212,451
156 4,212,452
158 4,212,453

CLASS 269

236 4,212,455
328 4,212,454

CLASS 271

4 4,212,456
288 4,212,457

CLASS 272

93 4,212,458

CLASS 273

1 E 4,212,459
58 B 4,212,460
73 F 4,212,461
121 A 4,212,465
121 R 4,212,466
163 A 4,212,467
240 4,212,468
416 4,212,464
418 4,212,463
424 4,212,462

CLASS 274

23 A 4,212,469
37 4,212,470
4,212,490
38 4,212,471

CLASS 277

12 4,212,472
81 P 4,212,473
83 4,212,474
96.1 4,212,475
134 4,212,476
193 4,212,477

CLASS 280

11.28 4,212,479
79.1 A 4,212,478
226 R 4,212,480
276 4,212,481
289 D 4,212,482
444 4,212,483
707 4,212,484
766 4,212,485

CLASS 285

4 4,212,486
95 4,212,487
200 4,212,488

CLASS 290

44 4,213,057

CLASS 292

33 4,212,489

CLASS 295

11 4,212,491

CLASS 296

98 4,212,492

CLASS 297

6 4,212,493
69 4,212,494
84 4,212,495
226 4,212,496

CLASS 299

53 4,212,497

CLASS 303

6 C 4,212,498
103 4,212,499
115 4,212,500
116 4,212,501

CLASS 307

40 4,213,058
41 4,213,059
116 4,213,061
117 4,213,062
141 4,213,063
219 4,213,064
251 4,213,065
252 C 4,213,066
4,213,067
255 4,213,068
426 4,213,060

CLASS 308

3 R 4,212,502
3.6 4,212,503
9 4,212,504
79 A 4,212,505

CLASS 310

46 4,213,069
71 4,213,070
344 4,213,071

CLASS 312

118 4,212,506

CLASS 313

217 4,213,072
310 4,213,073
509 4,213,074

CLASS 315

83 4,213,075
282 4,213,076

CLASS 318

245 4,213,077

CLASS 320

2 4,213,078
4,213,079
21 4,213,080
40 4,213,081

CLASS 323

17 4,213,082
44 R 4,213,083
56 4,213,084

CLASS 324

57 R 4,213,085
62 4,213,086
4,213,087
98 4,213,088
115 4,213,089
138 4,213,090
210 4,213,091
319 4,213,092
329 4,213,093

CLASS 330

51 4,213,097
253 4,213,098
297 4,213,099

CLASS 331

78 4,213,101
94.5 D 4,213,100
94.5 G 4,213,102

CLASS 332

9 T 4,213,103

CLASS 333

150 4,213,104
165 4,213,105
185 4,213,106
197 4,213,107

CLASS 335

131 4,213,108
174 4,213,109
207 4,213,110

CLASS 336

65 4,213,111

CLASS 338

183 4,213,112
309 4,213,113

CLASS 339

18 B 4,212,507
4,212,508
95 D 4,212,509
147 R 4,212,510
276 T 4,212,511

CLASS 340

27 R 4,213,114
47 4,213,115
73 4,213,116
146.3 H 4,213,117
149 R 4,213,118
151 4,213,119
347 DA 4,213,120
384 E 4,213,121
552 4,213,122
4,213,123
706 4,213,124
753 4,213,125

CLASS 343

5 CF 4,213,127
5 SM 4,213,126
6.5 R 4,213,128
6.8 R 4,213,129
16 M 4,213,130
844 4,213,131
854 4,213,132
4,213,133

CLASS 346

1.1 4,213,134
76 PH 4,213,135
139 C 4,213,136

CLASS 350

96.15 4,212,512
4,212,513
96.21 4,212,514
96.24 4,212,516
175 ML 4,212,515
217 4,212,517
357 4,212,518
362 4,212,519

CLASS 351

37 4,212,520

CLASS 352

130 4,212,521

CLASS 354

25 4,212,522
4,212,523
86 4,212,524
173 4,212,525
225 4,212,526
275 4,212,527
317 4,212,528

CLASS 355

3 R 4,212,529
14 R 4,212,530
55 4,212,531
60 4,212,532
91 4,212,533

CLASS 356

1 4,212,534
51 4,212,535
71 4,212,536
73.1 4,212,537
127 4,212,538
336 4,212,539
354 4,212,540
430 4,212,541

CLASS 357

30 4,213,137
4,213,138
41 4,213,139
4,213,140
74 4,213,141
91 4,213,142

CLASS 358

4 4,213,143
12 4,213,144
43 4,213,145
63 4,213,146
112 4,213,147
128.6 4,213,148
153 4,213,149
166 4,213,150
178 4,213,151
186 4,213,152
231 4,213,153
260 4,213,154
262 4,213,155
275 4,213,156
293 4,213,157
296 4,213,158

CLASS 360

16 4,213,159
35 4,213,163
73 4,213,160
4,213,161
85 4,213,162

CLASS 361

56 4,213,164
86 4,213,166
94 4,213,165
213 4,213,167
225 4,213,168

CLASS 362

74 4,213,169
267 4,213,170
310 4,213,171
413 4,213,172

CLASS 363

163 4,213,173

CLASS 364

100 4,213,189
104 4,213,174
119 4,213,175
200 4,213,176
4,213,177
4,213,178
405 4,213,179
431 4,213,180
4,213,181
493 4,213,182
507 4,213,183
574 4,213,184
721 4,213,185
723 4,213,186
724 4,213,187
739 4,213,188
900 4,213,190

CLASS 365

73 4,213,191
118 4,213,192
125 4,213,193

CLASS 366

54 4,212,542
85 4,212,543
150 4,212,544
152 4,212,545
213 4,212,546
325 4,212,547
348 4,212,548

CLASS 367

14 4,213,194
92 4,213,195
94 4,213,196
4,213,197
113 4,213,198
117 4,213,199
4,213,200

CLASS 368

62 4,212,153
80 4,212,158
82 4,212,159

CLASSIFICATION OF PATENTS

85 4,212,156
87 4,212,157
248 4,212,154
250 4,212,155

CLASS 370

12 4,213,094
62 4,213,201
100 4,213,011

CLASS 375

10 4,213,007
14 4,213,095
97 4,213,006

CLASS 400

154 4,212,549
196.1 4,212,550
208 4,212,551
249 4,212,552
279 4,212,553
550 4,212,554
639.1 4,212,555

CLASS 401

208 4,212,556

CLASS 403

1 4,212,557
41 4,212,558
348 4,212,559
353 4,212,560

CLASS 405

195 4,212,561
4,212,562
4,212,563
218 4,212,564
269 4,212,565

CLASS 406

68 4,212,566

CLASS 407

46 4,212,567
53 4,212,568

CLASS 408

59 4,212,569
82 4,212,571
95 4,212,570

CLASS 409

37 4,212,572
251 4,212,573

CLASS 414

8 4,212,575
22 4,212,576
23 4,212,577
39 4,212,578
95 4,212,579
502 4,212,574
522 4,212,580
529 4,212,581
694 4,212,582
728 4,212,583
748 4,212,584

CLASS 415

53 R 4,212,585

CLASS 416

93 A 4,212,586
96 R 4,212,587
141 4,212,588

CLASS 417

12 4,212,589
24 4,212,590
38 4,212,591
50 4,212,592
53 4,212,593
54 4,212,594
84 4,212,595
216 4,212,596
225 4,212,597
229 4,212,598
295 4,212,599
360 4,212,600
365 4,212,601

CLASS 418

178 4,212,602
256 4,212,603

CLASS 422

12 4,212,842
16 4,212,843
56 4,212,844
82 4,212,845
122 4,212,846
135 4,212,847
267 4,212,848

CLASS 423

10 4,212,849
175 4,212,850
230 4,212,851
4,212,852
235 4,212,853
247 4,212,854
522 4,212,855

CLASS 424

52 4,212,856
95 4,212,857
118 4,212,858
180 4,212,859
4,212,860
200 4,212,861
212 4,212,862
240 4,212,863
243 4,212,864
250 4,212,865
253 4,212,866
263 4,212,867
4,212,868
4,212,869
4,212,870
267 4,212,871
270 4,212,872
4,212,873
272 4,212,874
273 B 4,212,876
4,212,877
273 R 4,212,875
274 4,212,878
4,212,879
4,212,880
275 4,212,881
4,212,882
277 4,212,883
285 4,212,884
288 4,212,885
304 4,212,887
308 4,212,886
324 4,212,888

CLASS 425

19 4,212,604
20 4,212,605
72 S 4,212,606
83.1 4,212,607
85 4,212,608
100 4,212,609
110 4,212,610
114 4,212,611
4,212,612
141 4,212,613
214 4,212,614
222 4,212,615
256 4,212,616
311 4,212,617
326.1 4,212,618
373 4,212,619
381 4,212,620
405 H 4,212,621
444 4,212,622
547 4,212,623
548 Re.30,335
4,212,624
549 4,212,625
562 4,212,626
564 4,212,627

CLASS 426

7 4,212,889
69 4,212,890
231 4,212,891
289 4,212,892
330.2 4,212,893
332 4,212,894
600 4,212,895
623 4,212,896

CLASS 427

2 4,212,897
6 4,212,898
44 4,212,899
53.1 4,212,900
4,212,901
64 4,212,902
127 4,212,903
4,212,904
221 4,212,905
237 4,212,906
309 4,212,907
355 4,212,908
389.8 4,212,697
393.5 4,212,909

CLASS 428

35 4,212,910
131 4,212,911
209 4,212,912
251 4,212,913
268 4,212,914
288 4,212,915
290 4,212,916
310 4,212,917
403 4,212,918
410 4,212,919
413 4,212,920
414 4,212,921
419 4,212,922
4,212,923
428 4,212,924
447 4,212,925
472 4,212,926
512 4,212,927
514 4,212,928

CLASS 429

37 4,212,929
101 4,212,930
104 4,212,931
111 4,212,932
122 4,212,933
181 4,212,934

CLASS 430

326 4,212,935
494 4,212,672
496 4,212,673
503 4,212,936
620 4,212,937

CLASS 432

4 4,212,628
10 4,212,629
60 4,212,631
80 4,212,630
115 4,212,632
122 4,212,633
186 4,212,634
239 4,212,635
250 4,212,636

CLASS 433

5 4,212,637
8 4,212,638
20 Re.30,332
30 4,212,105
72 4,212,639
82 4,212,640
133 4,212,641

CLASS 435

11 4,212,938
19 4,212,939
55 4,212,940
92 4,212,941
119 4,212,942
121 4,212,944
180 4,212,943
212 4,212,945
4,212,946
254 4,212,947
296 4,212,948
315 4,212,949
316 4,212,950

CLASS 455

260 4,213,096

CLASS 521

112 4,212,952
137 4,212,953
159 4,212,954

CLASS 525

5 4,212,955
60 4,212,956
131 4,212,957
310 4,212,958
524 4,212,959
4,212,960

CLASS 526

151 4,212,961

CLASS 528

45 4,212,962
272 4,212,963
340 4,212,964
4,212,965
486 4,212,966
495 4,212,951
500 4,212,967

CLASS 542

426 4,212,968
429 4,212,969
430 Re.30,339
455 4,212,970

CLASS 544

37 4,212,971
106 4,212,972

CLASS 546

16 4,212,973
19 4,212,974
49 4,212,975
115 4,212,976
243 4,212,977
253 4,212,978
270 4,212,979
288 4,212,980

CLASS 548

246 4,212,981
313 4,212,982
352 4,212,983

CLASS 560

18 4,212,984
53 4,212,985
121 4,212,986
4,212,987
174 4,212,988
232 4,212,989
241 4,212,990

CLASS 562

480 4,212,991
485 4,212,995
492 4,212,992
503 4,212,993
568 4,212,994

CLASS 568

17 4,212,831
313 4,212,825
314 4,212,828
347 4,212,827
433 4,212,829
486 4,212,830
639 4,212,996
724 4,212,997
807 4,212,998
4,212,999
861 4,213,000

CLASS 585

510 4,213,001

CLASSIFICATION OF DESIGNS

D2— 257 255,840
322 255,841
255,842
255,843
415 255,844
D4— 38 255,845
D6— 71 255,846
79 255,847
255,848
255,849
113 255,850
255,851
130 255,852
179 255,853
201 255,854
235 255,855
242 255,856
D7— 1 255,857
9 255,858
28 255,859
255,860
47 255,861
66 255,862
108 255,863
164 255,864
194 255,865
D8— 38 255,866
98 255,867
323 255,868
356 255,869
D9— 2 255,870
255,871
169 255,872
175 255,873
224 255,874
294 255,875
D10— 26 255,876
30 255,877
64 255,878
65 255,879
67 255,880
72 255,881
121 255,882
255,883
D11— 6 255,884
43 255,885
146 255,887
152 255,888
255,889
156 255,886
D12— 7 255,893
57 255,890
62 255,891
70 255,892
114 255,894
D13— 11 255,895
99 255,896
D14— 12 255,897
28 255,898
42 255,899
68 255,900
255,901
79 255,902
D15— 139 255,903
D17— 9 255,904
14 255,905
D19— 23 255,906
D20— 4 255,907
255,908
D21— 15 255,909
23 255,910
90 255,911
114 255,912
168 255,914
191 255,915
247 255,916
250 255,913
D22— 1 255,917
27 255,918
30 255,919
D23— 32 255,921
34 255,920
53 255,922
58 255,923
61 255,924
97 255,926
139 255,925
147 255,927
150 255,928
D24— 10 255,929
12 255,930
33 255,931
36 255,932
38 255,933
54 255,934
58 255,935
255,936
59 255,937
99 255,938
D25— 48 255,939
74 255,940
D26— 76 255,941
D27— 02 255,942
51 255,943
D28— 25 255,944
67 255,945
D30— 1 255,946
2 255,947
6 255,948
8 255,949
255,950
99 255,951

CLASSIFICATION OF PLANTS

P.— 41 4,570
43 4,571
4,572
48 4,573
4,574
89 4,575

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,212,234	4,212,233	08 :	4,212,179	4,212,604	4,212,992	4,213,073
	4,212,305	4,212,285		4,212,196	4,212,605	4,213,013	4,213,120
4 :	4,212,265	4,212,289		4,212,446	4,212,635	4,213,058	4,213,127
	4,212,443	4,212,300		4,212,489	15 : 4,212,133	4,213,069	4,213,131
	4,212,488	4,212,329		4,212,591	16 : 4,212,359	4,213,132	25 : Re.30,336
6 :	4,212,150	4,212,335		4,213,045	17 : Re.30,333	4,213,189	4,212,090
	4,212,225	4,212,346		4,213,136	4,212,094	18 : Re.30,334	4,212,093
	4,212,246	4,212,351		4,213,190	4,212,123	4,212,099	4,212,095
	4,212,247	4,212,356	09 :	4,212,160	4,212,125	4,212,115	4,212,137
	4,212,261	4,212,368		4,212,161	4,212,139	4,212,116	4,212,224
	4,212,311	4,212,398		4,212,193	4,212,142	4,212,151	4,212,343
	4,212,313	4,212,402		4,212,282	4,212,168	4,212,166	4,212,371
	4,212,418	4,212,408		4,212,298	4,212,185	4,212,403	4,212,399
	4,212,426	4,212,445		4,212,621	4,212,192	4,212,411	4,212,458
	4,212,434	4,212,450		4,212,623	4,212,218	4,212,421	4,212,513
	4,212,441	4,212,460		4,212,750	4,212,227	4,212,509	4,212,521
	4,212,461	4,212,467		4,212,929	4,212,231	4,212,878	4,212,524
	4,212,578	4,212,468		4,212,937	4,212,238	4,212,943	4,212,528
	4,212,611	4,212,486		4,212,944	4,212,254	4,212,977	4,212,540
	4,212,625	4,212,546		4,213,026	4,212,260	4,213,121	4,212,585
	4,212,690	4,212,549		4,213,053	4,212,266	19 : 4,212,202	4,212,638
	4,212,920	4,212,586		4,213,104	4,212,296	4,212,492	4,212,685
	4,212,953	4,212,592		4,213,135	4,212,302	4,212,520	4,212,707
	4,213,051	4,212,637	10 :	4,212,512	4,212,303	4,212,574	4,212,714
	4,213,089	4,212,652		4,212,815	4,212,322	4,212,582	4,212,742
	4,213,102	4,212,654		4,213,000	4,212,336	4,212,704	4,213,044
	4,213,112	4,212,717	12 :	4,212,148	4,212,337	4,213,165	4,213,054
	4,213,116	4,212,732		4,212,163	4,212,358	20 : 4,212,235	4,213,094
	4,213,146	4,212,740		4,212,294	4,212,375	4,212,262	4,213,122
	4,213,150	4,212,741		4,212,304	4,212,391	4,212,274	4,213,123
	4,213,167	4,212,755		4,212,332	4,212,395	4,212,319	4,213,159
8 :	4,212,290	4,212,797		4,212,386	4,212,464	4,212,378	4,213,161
9 :	4,212,588	4,212,800		4,212,388	4,212,466	4,212,417	4,213,170
	4,212,595	4,212,869		4,212,424	4,212,475	4,212,537	4,213,176
	4,212,988	4,213,004		4,212,480	4,212,478	4,212,598	4,213,200
	4,213,037	4,213,010		4,212,507	4,212,482	4,212,870	26 : Re.30,339
01 :	4,212,188	4,213,029		4,212,724	4,212,495	21 : 4,212,393	4,212,100
	4,212,896	4,213,043		4,212,730	4,212,573	4,212,502	4,212,138
04 :	4,212,088	4,213,060		4,212,781	4,212,596	4,212,566	4,212,195
	4,212,172	4,213,063		4,212,905	4,212,680	22 : 4,212,223	4,212,210
	4,212,430	4,213,064		4,212,917	4,212,696	4,212,576	4,212,211
	4,213,052	4,213,081		4,213,003	4,212,710	4,212,771	4,212,269
	4,213,129	4,213,092		4,213,057	4,212,711	4,212,812	4,212,271
06 :	4,212,087	4,213,118		4,213,079	4,212,727	24 : 4,212,145	4,212,277
	4,212,106	4,213,137		4,213,097	4,212,729	4,212,191	4,212,281
	4,212,108	4,213,157		4,213,099	4,212,743	4,212,244	4,212,318
	4,212,130	4,213,158		4,213,156	4,212,759	4,212,297	4,212,372
	4,212,169	4,213,160		4,213,185	4,212,769	4,212,416	4,212,381
	4,212,187	4,213,168	13 :	4,212,176	4,212,770	4,212,487	4,212,462
	4,212,199	4,213,192		4,212,222	4,212,784	4,212,538	4,212,485
	4,212,204	4,213,194		4,212,331	4,212,795	4,212,612	4,212,533
	4,212,205	4,213,198		4,212,363	4,212,902	4,212,778	4,212,564
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DESIGN PATENTS

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56 : 255,890

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6 : 4,571
4,573
4,574
06 : 4,570
26 : 4,575
34 : 4,572

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